



Investigating Factors Affecting Performance Evaluation in Local and Regional Organizations with an Emphasis on disaster Management: A Systematic Review

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Abstract

Introduction: Performance evaluation is one of the key indicators for predicting and dealing with disasters, which helps in comprehensive management and providing coherent solutions. This study presents a systematic review of the factors and components that shape performance evaluation frameworks within local and regional disaster management organizations.

Method: A systematic review was conducted across three databases—PubMed, Scopus, and Web of Science—in English, without time restrictions, using keywords such as "performance evaluation," "key performance indicators," "crisis management, disaster, catastrophe," "local governments," "municipality, metropolis," and "tools, questionnaire, checklist" until May 21, 2024. Relevant articles were selected using the Hawker quality assessment tool and the PRISMA checklist. The final articles were analyzed through directed content analysis, focusing on performance evaluation components in regional and local organizations within the disaster management cycle framework.

Result: Fourteen eligible studies were identified. The findings indicate that performance evaluation in local and regional disaster management organizations spans all phases of the disaster management cycle. Pre-disaster phase integrates prevention and preparedness through risk assessment, early warning systems, emergency planning, resource stockpiling, and public education. During-disaster response focuses on command and coordination, security, public communication, shelter management, firefighting, health services, and emergency transport. Post-disaster phase involves infrastructure repair, debris clearance, and documentation of lessons learned. Together, these phases form a comprehensive cycle for effective disaster risk management and continuous improvement.

Conclusion : This study showed that an effective disaster management system depends on the seamless integration of pre-disaster prevention and preparedness, response operations, and post-disaster recovery. Risk assessment, early warning systems, planning, and public education build community readiness, while coordinated response efforts including command, security, health services, and emergency transport save lives during crises. Post-disaster infrastructure restoration and documentation of lessons learned ensure continuous improvement. Ultimately, a unified cycle supported by inter-agency coordination, volunteer engagement, and robust communication is essential for building resilient communities capable of withstanding and recovering from disasters.

Keywords: Performance evaluation, disaster management, passive defense, local and regional organizations.

Introduction

The occurrence of unexpected disasters is increasing worldwide ¹Nearly all countries are exposed to unforeseen disasters, including storms, floods, earthquakes, wildfires, droughts, terrorist attacks, volcanic eruptions, chemical incidents, and pandemics. Disasters can emerge suddenly or gradually, with severe

adverse effects on public health, social stability, and economic outcomes². According to the Centre for Research on the Epidemiology of Disasters (CRED), 396 natural disasters were recorded in 2019³ rising to 432 in 2021. The economic damage from these disasters exceeded \$252 billion—nearly \$100 billion more than the average of the past two decades. Asia accounted for approximately 40% of these disasters, 49% of fatalities, and 66% of affected individuals in 2021. Recent catastrophes, such as the 2023 earthquakes in Turkey and Syria and the wildfires in Hawaii, further underscore this trend⁴. Urbanization, a product of the Industrial Revolution, became a global phenomenon in the 20th century and has increasingly spread to developing countries. In many major cities of the developing world, rapid population growth and urbanization have led to significant challenges⁵. The World Bank estimates that 56% of the global population lived in urban areas in 2020, a figure projected to rise to 68% by 2050⁶. This unchecked urban expansion has created chaotic cities plagued by socioeconomic and environmental problems, exacerbated by inefficient urban management practices⁷. The core issue in urban management is not merely a lack of financial resources, advanced technology, or skilled personnel, but rather the ineffective governance of these elements^{8,9}. Cities, as the most important places for people's social, economic and cultural life, are always vulnerable to natural and man-made hazards. Rapid urban population growth, unbalanced infrastructure development, climate change

Objective

This study aims to identify key concepts and components of performance evaluation models in disaster management, focusing on the role of local and regional organizations in disaster governance.

Methods

Search Strategy

A systematic search was conducted to identify studies evaluating performance assessment components in local and regional organizations, with no time restrictions up to May 21, 2024. The search was limited to English-language. We searched online databases included PubMed/Medline, Web of Science (WOS), and Scopus with suitable Mesh term and keywords. Mesh term and Keywords included: "performance evaluation," "key performance indicators (KPIs)," "crisis management, disaster management," "local governments,

and the fragility of houses and buildings have caused crises such as earthquakes, floods, fires, air pollution, infectious diseases and social unrest to become more frequent and severe. In such circumstances, the proper management of urban crises has become one of the most important priorities of local authorities. Since municipalities are closest to the people of all institutions, they play a leading role in planning for prevention, rapid response in times of emergency and post-disaster reconstruction¹⁰. Enhancing safety requires proactive prevention, preparedness, and safeguarding human environments—areas where urban planners and managers must focus¹¹. Effective disaster management demands understanding hazards, their triggers, and root causes, with tailored measures for each disaster phase¹². Performance evaluation is a critical predictive tool for disaster response, enabling comprehensive management and cohesive strategies. A robust performance evaluation system generates continuous data for internal governance (e.g., monitoring progress and addressing gaps) and external accountability (demonstrating results to citizens)¹³. Given the rise in global disasters, performance evaluation in disaster management and passive defense—particularly for local/regional organizations—has become vital. These entities bear primary responsibility for disaster prevention and response, yet the absence of a standardized evaluation framework has led to operational challenges.

This study employed a systematic review study, by the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines¹⁴. The Hawker tool¹⁵ was used to assess the quality of included studies.

municipalities," "assessment tools, checklists." Boolean operators (AND/OR) refine combinations (Table 1).

Inclusion Criteria were original studies that directly addressed performance evaluation components in disaster management in local and regional organizations

Exclusion Criteria were studies that focused solely on national/international levels without local/regional applicability, simulation studies, studies that assessed emergency department and hospital settings, studies

with types of conference abstracts, case reports, review articles, grey literature, and letters to the editor.

Two researchers were searched databases independently. A third reviewer resolved discrepancies.

Data Screening: Two independent researchers were screened titles and abstracts. Full-text review followed for eligible studies. A third reviewer resolved discrepancies.

Risk of Bias Assessment

Hawker's quality assessment scale ¹⁵(scores: *good* =4, *fair* =3, *poor* =2, *very poor* =1).

Domains Evaluated: Abstract/title clarity. Introduction/objectives. Methodology, sampling, data analysis. Ethical considerations, bias. Findings, generalizability, utility.

Extracted performance indicators were categorized using directed content analysis, aligned with disaster management cycles (preparedness, response, recovery).

Results

Characteristics of the Included Studies

Following the exclusion of irrelevant studies based on the inclusion criteria, 14 articles met the eligibility requirements for this systematic review (Fig 1). The general characteristics of these studies are summarized in Table 2.

A review of 14 reputable studies in the field of disaster management performance evaluation shows that this research area has experienced a significant growth of 64% since 2020. Geographically, Asian countries have the dominant share with 57%, which can be attributed to the high exposure of this region to natural hazards.

Pre-disaster Phase

In the pre-disaster phase, several measures are taken to prevent and prepare. Risk assessment includes hazard identification and mapping, vulnerability assessment of buildings and infrastructure, seismic risk assessment at the city scale, and monitoring public perception of risk. Risk reduction planning also includes land use planning and zoning, structural

Data Extraction

Two researchers independently extracted data using a customized form. Consistency was verified continuously; conflicts were resolved via consensus or third-reviewer arbitration.

Outcomes: Study metadata (author, year, location). Study type, population, disaster type. Objectives, outcomes, and performance evaluation components for disaster management in local/regional organizations.

Natural hazards such as earthquakes and floods have formed the most research topic with 57%. Among the stages of the disaster management cycle, the preparedness and prevention stage has the most focus with 71%, indicating the importance of a preventive approach in disaster management.

In terms of methodology, mixed methods (quantitative and qualitative) are the most common approach with 57%, and the total number of participants in all studies reaches 3,956 people. The largest study was conducted by Wang et al. in 2024 with 2,430 participants.

Overall, the findings indicate significant growth in this research area with a focus on prevention and preparedness in Asian countries, but the lack of attention to the response stages and especially post-disaster recovery, along with a limited geographical focus, are among the existing research gaps that require further research in the future.

The extracted findings were organized according to the disaster management cycle, encompassing pre-disaster, during-disaster, and post-disaster phases, and highlighting the main components used for performance evaluation in local and regional organizations

protection measures such as seawalls and retaining walls, enforcement of building codes and seismic retrofitting, and community-based disaster risk reduction strategies. In addition, awareness is raised among residents through public awareness campaigns about disaster risks, community participation and engagement, and familiarization with local hazards and protection measures.

The establishment of early warning systems based on the risks of each region and the processing of seismic data play an important role in informing the community. Designing emergency operations plans based on different scenarios, specific communication protocols and business continuity plans can create a more effective response when disasters occur. Conducting exercises based on discussions and operations can greatly help in improving and coordinating and responding to the organization. In the meantime, organizing volunteers through recruiting and training local forces, forming community-based response teams and creating response capacities in the pre-crisis period are very important. Providing appropriate risk-based logistics will create an appropriate response. Establishing information technology infrastructure networks is one of the most important axes for informing and coordinating, collecting data and sharing information during disasters. Finally, public education in schools and communities about self-help and resilience, along with continuous information about risks and safety measures, is the completing link in this preparedness chain.

During-disaster Phase

In the command and coordination phase, the structure of the incident command system as the main framework for operations management, along with the establishment of an emergency operations center and the development of leadership and decision-making

protocols, as well as the determination of specific roles and responsibilities for all actors, provides an executive platform for response, which in the meantime, ensures security and control through population management and access control in affected areas, coordination with the police force, and field order and security. The dissemination of accurate and timely information, using crisis communications, plays an important role in disaster management. Management of temporary shelters, evacuation centers, registration and management of shelters, provision of basic needs, especially of vulnerable victims, is carried out. Coordination with fire organizations, provision for the transfer of injured persons, and provision of health services are other components of the response.

Post-disaster Phase

In the reconstruction and recovery phase, rebuilding infrastructure and returning to normal and stable conditions are important after the disaster. In addition to these issues, operational measures, documentation and knowledge management through the preparation of post-disaster review and evaluation reports, and accurate documentation of lessons learned can play an important role in updating operational plans and programs. This issue plays a vital role in continuously improving the crisis management system and preventing the repetition of mistakes in future disasters (table 4).

Table 1: search strategy

Search strategy
Search engines and databases:
PubMed, Scopus, web of science,
Limits: Language (Only resource with at least an abstract English)
Date: UP TO 21 May 2024
Strategy: #1 AND #2 AND #3 AND #4
#1 ("Performance evaluation" OR "performance assessment" OR "performance analysis" OR "Performance Review" OR "Key Performance Indicators" OR "360-Degree Feedback" OR "Organizational Performance" OR "Performance Metrics" OR "Outcomes Assessment")
#2 ("Disaster prevention" OR preparedness OR "Disaster Management" OR disaster OR crisis OR "civil defense" OR "civil protection" OR "military defines" OR "incident management" OR catastrophe OR "emergency management")
#3 (city OR town OR municipal* OR metropolis OR "Megalopolis conurbation" OR "urban area" OR metropolitan OR "area burgh" OR "local government")
#4 (instrument OR tool OR questionnaire OR measurement OR checklist OR scale OR test OR inventory OR battery OR reliability OR validity OR psychometric OR "Organizational Tool")

Table 2: Scoring

ID	Authors / Year	Abstract & title	Introduction & aims	Method & data	Sampling	Data analysis	Ethics & bias	Results	Transferability	Implications	Total	Mean	Grade
1	Wang., et al. 2024 ¹⁶	4	4	4	3	4	2	4	3	4	32	3.56	High
2	Deverell., et al. 2024 ¹⁷	4	4	4	4	4	4	4	4	4	36	4.00	High
3	Nasiri et al., 2023 ¹⁸	4	4	4	4	4	4	4	4	4	36	4.00	High
4	Pescaroli,et al.2023 ¹⁹	4	4	4	3	4	4	4	4	4	35	3.89	High
5	Koren al.2023 ²⁰	4	4	4	4	4	4	4	3	4	34	3.78	High
6	Long, et al.2022 ²¹	4	4	4	3	4	2	4	3	4	32	3.56	High
7	Ke, Y. J. Lin, et al., al.2020 ²²	4	4	4	3	4	4	4	4	4	35	3.89	High
	Y. Liu, et al.2020 ²³	4	4	4	3	4	4	4	4	4	35	3.89	High
9	Abdel-Basset, R, et al.2020 ²⁴	4	4	3	4	4	3	4	3	4	33	3.67	High
10	Narbón-Perpiñá et al., 2019 ²⁵	4	4	4	4	4	2	4	4	4	34	3.78	High
11	Basaglia, et al. 2018 ²⁶	4	4	4	4	4	3	4	4	4	35	3.89	High
12	Picozzi, et al.2015 ²⁷	4	4	4	4	4	3	4	4	4	35	3.89	High
13	2015 ²⁸ Bambara, et al.	4	4	4	4	4	3	4	4	4	35	3.89	High
14	Palttala et al. (2011) ²⁹	4	4	4	4	4	3	4	4	4	35	3.89	High

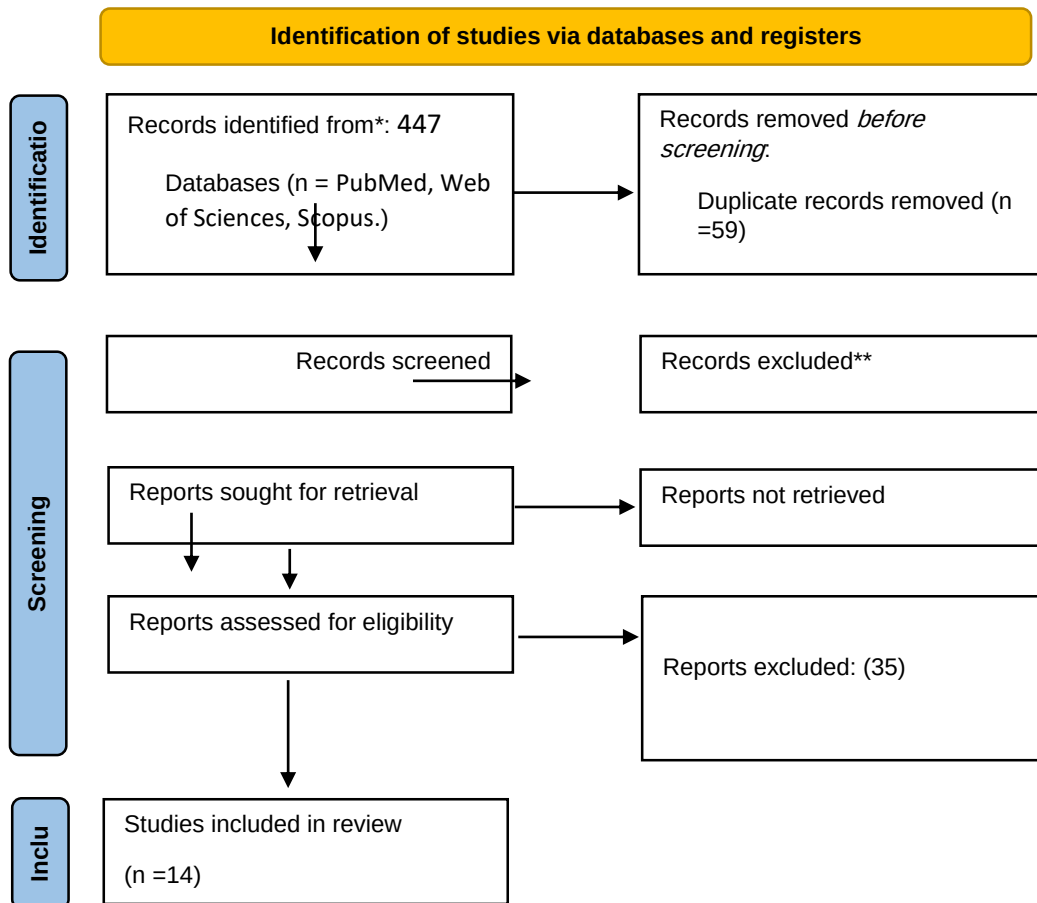


Fig 1: PRISMA flow chart

Table 3: studies characteristics

ID	First Author/ Year	Country/ Location study	Aim	Study design Study type	Population	Finding	Tools	Types of disaster s	Phase of the disaster managem ent cycle
1	Wang ., et al.2024 ¹⁶	China (S City, Guangdong)	what are the conceptual connotations of urban emergency management performance? How can urban emergency management performance be measured?	Quantitative	0	Developed 12 primary and 44 secondary indicators; overall score 5.948 (defined level); bias toward response over prevention	Analytic Hierarchy Process (AHP), expert interviews, document review	Typhoon / Natural disasters	Prevention, Preparedness, Response, Recovery
2	Deverell, E, et al. 2024 ¹⁷	Sweden	The purpose of this article was to offer a critical take on the current mode of crisis inquiry by suggesting the term contingency as an alternative lens to the benefit of both crisis theory and practice.	Qualitative / Semi-structured interviews	40 interviews	Establishing initial frameworks for management Interaction with stakeholders Interaction with the public	semi-structured interview	All-hazards	Response
3	A. Nasiri, et al.2023 ¹⁸	Iran	to investigate the experiences of senior managers on how local government procedures prevent COVID-19 from spreading within the group in Tehran's municipality	Qualitative study	24senior managers with experience in urban planning	the necessity of developing a vulnerable protection plan and allocating funds away from the bureaucracy	qualitative research reporting (COREQ)	Biology - COVID-19	Preparedness and Response
4	Pescaroli, et al.2023 ¹⁹	Mexico City	investigates how EEW can be integrated into business continuity practices, organizational resilience, and disaster risk reduction (DRR).	Mixed methods qualitative (and)quantitative	A team of 11 Mexican academics includes evidence from 15 semi-structured interviews 78 valid questionnaires	Earthquake Early Warning (EEW)	Researcher-made questionnaire	Earthquake	prevention
5	Koren al.2023 ²⁰	Slovenia	The purpose of this study is to comprehensively evaluate a city's seismic performance from a human perspective by applying objective measures while also considering the time aspect (before the event, immediately after it, and during the recovery phase)	qualitative (and)quantitative	test model with 6843 inhabitants	: A stronger earthquake (PGA of 0.30 g) has far-reaching consequences for urban performance, with the old city center being particularly affected. The system's performance drops to less than half of its initial level, indicating a sharp deterioration in the quality of life as reflected in the possibility of meeting basic human needs (survival and protection).	Graph theory and fragility curves	Earthquake	Mitigation, Preparedness, Response, Recovery
6	Long, et al.2022 ²¹	China (Chongqing, Wanzhou)	To evaluate operational performance of e-government microblogs under emergencies using DEA method	Mixed methods (qualitative and quantitative)	301 valid questionnaires 24 e-government	Found that district-level microblogs performed better than municipal; turning points significantly affect performance	Data Envelopment Analysis (CCR model),	Accident (bus crash)	Response & Recovery

					microblogs		content analysis		
7	Ke, Y. J. Lin, et al.2020 ²²	New Taipei City (NTPC)	to present how New Taipei City (NTPC) government, Taiwan, integrated the resources at the local government level and enhance the local disaster management by building a significant amount of resilient community, and begins with why the promotion of resilient community is necessary and how the promotion links to the local disaster management network	Mixed Methods (Qualitative: 7-step SOP, obstacle identification ; Quantitative: questionnaire (survey)	1180 participants (520 M, 660 F) from 33 communities, 100% response rate	promote the resilient community, identified the key obstacles, suggested the maintenance mechanism, and shown the successful formulation of the local disaster management network	anonymous physical questionnaire(Q8).	All-hazards	Mitigation, Preparedness, Response, Recovery
8	Y. Liu, S, et al.2020 ²³	China	to proposes a fuzzy-symmetrical Technique for Order Preference by Similarity to Ideal Solution-Entropy Weight (TOPSIS-EW) method with multi-granularity linguistic assessment (MGLA) information to evaluate the performance of emergency logistics	Mixed methods qualitative (and)quantitative	5 expert judgments	An index assessment system for emergency logistics has been developed, which includes 4 subsystems: information processing, logistics operations, organization and coordination, and post-crisis response.	The MCDM method (i.e., the fuzzy TOPSIS-EW method)	Earthquake	preparation, response, and recovery
9	Abdel-Basset, R, et al.2020 ²⁴	Egypt	To propose an integrated framework to evaluate the performance of smart disaster response systems under uncertainty.	Mixed methods qualitative (and)quantitative	3 experts obtains evaluation of the smart	smart disaster response systems (smart DRS) that based on information and communication technology (ICT) has been widespread	constructed using three common MCDM methods which is AHP, TOSIS, and VIKOR	natural hazard	Response
10	Narbón-Perpiñá et al., 2019 ²⁵	Spain (local governments)	To evaluate local government performance in times of crisis using DEA method	Quantitative / DEA analysis	Spanish local governments	Found that crisis periods affect local government efficiency; DEA effective for performance measurement	Data Envelopment Analysis (DEA)	Economic crisis (financial)	Response, Recovery
11	Basaglia, et al. 2018 ²⁶	Italy	to propose an effective procedure for urban seismic risk assessment and management, based on performance concepts and a mechanically proper model of the urban system within a reliability framework	Analyses Using Data		the development of an efficient approach for urban seismic risk assessment becomes essential.	Vulnerability Index and the Macroseismic method	earthquake	Mitigation
12	Picozzi, et al.2015 ²⁷	Italy	this work, we present a feasibility study for a nationwide EEWS in Italy obtained by the integration of the RAN and the software platform PRobabilistic and Evolutionary early warning SysTem (PRESTo).	Analyses Using Data		results indicate that the RAN-PRESTo EEWS could theoretically provide for higher seismic hazard areas reliable alert messages within about 5 to 10 s and maximum lead times of about 25 s	integration of the RAN network and the PRESTo software	Earthquake	preparedness

13	Bambara, et al. 2015 ²⁸	France	To propose a functional model to model scenarios of city crises	functional analysis .method		The purpose of this model is to help the various stakeholders of a city impacted by a natural hazard to better prepare for a similar hazard occurring in the future	the integration of the RAN network and the PRESTo software	natural hazard	Response
14	Palttala et al. 2012 ²⁹	Finland	To develop a framework for performance indicators (a Crisis Communication Scorecard) to measure and improve crisis communication preparedness of public .authorities	Instrument development and testing (including pilot tests, interviews with experts, and a case audit), Conceptual/ Methodological (with empirical testing)		The instrument was deemed comprehensive and usable. The framework combining stakeholders with communication tasks across crisis phases was appreciated. The case audit (water contamination) showed that communication with citizens was insufficient, with low scores in preparation (e.g., not identifying public groups, not monitoring risk perception) and response (e.g., no empathy shown, lack of situation clarification). The tool helped identify weak areas needing .improvement	Crisis Communication Scorecard (based on Balanced Scorecard methodology, using 63 performance indicators rated on a 1-5 scale, organized by crisis phases and stakeholder groups)	Water contamination (causing a Norovirus and Campylobacter epidemic)	Preparation, Warning, Crisis Response (with the scorecard covering all phases from Preparation to Evaluation, but the case audit focused on Preparation, Warning, and Response)

Table 4: summarized Results

Main Category	category	Subcategory	Component Details	Ref
Pre-disaster	Prevention	Risk Assessment	- Hazard identification and mapping - Vulnerability assessment of buildings and infrastructure - Seismic risk assessment at urban scale - Monitoring of risk perception	20, 26, 29-31
		Risk Reduction Planning	- Land-use planning and zoning - Structural protection measures (dikes, retaining walls) - Building code enforcement and retrofitting - Community-based disaster risk reduction strategies	20, 30, 31
		Public Education	- Disaster preparedness education in schools and communities - Training on self-rescue and mutual aid - Public communication on risk and safety measures	16, 18, 20, 31
		Increasing community awareness	- Public awareness campaigns on disaster risks - Community engagement and participation - Understanding of local hazards and protective actions	17, 29, 31
	Preparedness	Early warning system	- Earthquake early warning (EEW) systems - Weather monitoring and flood	21, 27, 31-33

during the-disaster			forecasting - Seismic network and data processing - Public alert dissemination (sirens, mobile apps, media)	
		Emergency operational plan	- Comprehensive emergency response plans - Scenario-based contingency plans - Communication plans and protocols - Business continuity plans (BCP)	16, 29, 31, 33, 34
		Exercises	- Tabletop exercises, war games, and full-scale drills - multi-agency coordination exercises - Scenario-based simulation training - Evaluation of exercise performance	16, 17, 29, 31, 33
		Resource Stockpiling	- Emergency supplies inventory (food, water, medical, shelter) - Equipment stockpiling (fire extinguishers, pumps, generators) - Supply chain and logistics planning - Stockpile maintenance and updating	16, 25, 31, 34
		Inter-agency coordination	- Multi-agency collaboration frameworks - Memoranda of understanding (MOUs) - Coordination meetings and joint planning - Cross-jurisdictional coordination mechanisms	17, 29, 31, 33, 34
		Volunteer Organization	- Recruitment and training of community volunteers - Establishment of community response teams - Integration of volunteers into local disaster management networks	16, 18, 31
		Communications and information technology	- Communication systems (radio, satellite, internet) - Social media for emergency communication - Information sharing platforms - Real-time data collection and dissemination	17, 18, 21, 32, 34
	Response	Command and coordination	- Incident Command System (ICS) structure - Emergency Operations Center (EOC) setup - Leadership and decision-making protocols - Clear roles and responsibilities	16, 17, 26, 30, 33
		Security and control	- Crowd control and traffic management - Cordon and access control at disaster sites - Law enforcement coordination - Protection of critical infrastructure	26, 30, 31
		Public Communication	- Timely and accurate information dissemination - Crisis communication via media and social media - Official spokespersons and press briefings - Countering rumors and misinformation	17, 18, 21, 29
		Temporary Shelter	- Evacuation center operations - Shelter management and registration - Provision of basic needs (food, water, sanitation) - Support for vulnerable evacuees	18, 20, 31, 34
		Firefighting	- Fire suppression operations - Use of fire extinguishers and equipment - Coordination with fire departments - Rescue from fire-affected buildings	30, 31

Post-disaster		Health Services	- Emergency medical response and triage - First aid and trauma care - Disease outbreak prevention and control - Mental health support and psychological first aid	18, 29, 31, 34
		Emergency Transport	- Evacuation of injured and vulnerable persons - Transport of relief supplies and equipment - Ambulance and emergency vehicle dispatch - Road clearance and debris removal	20, 30, 31, 34
	Infrastructure Repair	Infrastructure Repair	- Restoration of water and power supply - Road and bridge repair - Telecommunications restoration - Debris clearance and waste management	16, 20, 30, 34
	Documentation	Knowledge Management	- Post-event investigation and evaluation reports - Documentation of lessons learned - Updating of plans and procedures based on experience - Archiving of disaster data for future reference	16-18, 29, 30

Discussion

The findings of this systematic review revealed critical components of disaster management across three key phases: pre-disaster, response, and post-disaster. Our results are consistent with numerous studies in the literature and also reveal significant gaps in current practices. The pre-disaster phase encompasses both prevention and preparedness, with risk assessment and mitigation planning components reflecting appropriate evaluation frameworks for risk management in cities ^{26, 30}. The development of risk reduction strategies and programs, along with process improvement, are essential requirements for effective risk assessment ³⁵. Creating educational mechanisms for the community plays an important role in risk prevention and reduction. And transferring responsibilities from the national to the local level can play an effective role in disaster management to utilize the capacities of grassroots institutions.^{16, 17}. Also, focusing on the disaster response model and neglecting prevention is seen as a weakness in crisis responses¹⁶. Preparedness is one of the pre-crisis stages that is a key prerequisite for reducing response time and negative impacts in incidents and disasters^{16, 20}. The existence of early warning systems (EWS) based on hazards is an important part of the disaster and incident management cycle. Early warning systems, including

earthquake early warning, weather monitoring, and flood forecasting, are critical for issuing timely warnings before accidents occur. These systems, in the hands of governments and local authorities with a transparent and operational system, play an effective role in disasters and incidents. This cycle allows for continuous monitoring of hazards and, when an incident occurs, accurate information can be provided to overcome disasters with minimal damage^{27, 31, 33}. Emphasizing having an operational plan in the disaster management cycle can change the traditional approach of communities to a proactive approach^{16, 31, 33, 34}. Social participation, education, and people empowerment represent a preventive and comprehensive people-centered approach to disasters, and studies show that the capacities of education, organization, and public participation can be expressed in the performance of urban management. Studies show that the capacities for education, organization, and public participation can be expressed in urban management performance evaluation frameworks.^{18, 29, 31}. Support for vulnerable groups and infrastructure development in disasters is emphasized. Limited financial resources and lack of transparency in financial mechanisms remain challenges in policymaking^{18, 33}. To implement this program, various exercises and effective training will lead to inter-organizational coordination and effective response. Another important issue in

preparedness is the use of volunteer capacities and effective and specialized training so that these individuals can respond effectively in different teams during an incident^{16-18,31}.

Stockpiling and emergency logistics planning are highlighted across multiple studies^{16, 18, 31, 34}. During the disaster response phase, the Incident Command System structure and Emergency Operations Center setup provide the foundation for command and coordination^{16, 17, 26, 31, 34}

with clear roles, leadership, and decision-making protocols being critical. Security and control measures, including crowd control, and critical infrastructure protection, are emphasized across studies.

Temporary accommodation operations, including the management of evacuation centers, provision of basic needs, and support for vulnerable evacuees, are critical components. This issue should be addressed in the management of urban services^{16,18,34}.

Reconstruction and recovery are considered one of the most important stages of the crisis management cycle. Studies show that performance in the recovery phase plays an important role in improving prevention and preparedness programs^{16, 20}.

documentation and knowledge management through post-event investigation, documentation of lessons learned, updating plans and procedures based on experience, and archiving disaster data for future reference enable continuous improvement. Learning from successful city interventions worldwide to address vulnerabilities is effective^{16, 29-31, 34}.

The methodological rigor of our study, following guidelines (PRISMA)¹⁴ and the Hawker quality assessment by the Preferred Reporting Items for Systematic Reviews¹⁵, ensures the validity of these findings. This study provides a comprehensive framework for assessing disaster management performance across all phase's pre-disaster, response, and post-disaster integrating findings from diverse fields and identifying areas for improvement in current practices. The evidence-based components we identified can guide policymakers in developing more effective disaster management strategies.

Conclusion

This systematic review identifies key performance evaluation components for disaster management in local

and regional organizations, emphasizing the critical phases of pre-disaster, disaster response, and post-disaster recovery. The findings highlight the importance of risk assessment, infrastructure preparedness, community engagement, and adaptive governance in enhancing organizational resilience. Despite growing recognition of disaster management best practices, significant gaps remain in standardized evaluation frameworks, particularly for vulnerable populations and technological integration. The study underscores the need for evidence-based policy development and cross-sector collaboration to improve disaster response efficacy. Future research should focus on validating performance metrics across diverse disaster scenarios and integrating local knowledge with global best practices to strengthen urban resilience. These insights provide a foundation for policymakers and practitioners to optimize disaster management systems and mitigate the escalating impacts of disaster worldwide.

Limitations of this study include possible publication bias and a focus on English-language literature. Future research should include local language studies and explore the implementation challenges identified in works such as on the management of vulnerable groups.

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Conflict of Interest Disclosures

The authors declare that they have no competing interests.

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Authors' Contributions

All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

Ethical Statement

This study was part of a doctoral dissertation with the number 402000380, which was conducted after

approval by the Ethics Committee of Baqiyatallah University of Medical Sciences and the issuance of the Code of Ethics (IR.BMSU.BAQ.REC.1403.142).

Declaration of Generative AI and AI-assisted technologies

The authors declare that the Monica platform (English edition) was used for language editing and paper analysis. However, all scientific content, expert analysis, data interpretation, and final conclusions were produced, reviewed, and verified directly by the authors.

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