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Community Resilience and Healthcare Continuity during Local Emergencies

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Abstract

Local emergencies such as floods, heat events, severe storms, earthquakes, infectious-disease outbreaks, infrastructure failures, and other disruptive incidents can rapidly compromise routine health-care delivery even when the emergency itself is geographically limited. Continuity becomes particularly critical for individuals requiring regular medication, dialysis, maternal and child health services, chronic-disease monitoring, mental-health support, rehabilitation, home-based care, or other time-sensitive health services. This study examines community resilience as an operational mechanism for protecting health-care continuity during local emergencies. A structured integrative review and conceptual analytical methodology was used to synthesize recent evidence on health-system resilience, community engagement, primary health care, emergency communication, medication continuity, digital health, vulnerable-population support, and community-based disaster response.

The World Health Organization defines resilient health systems in terms of their capacity to prevent, prepare for, detect, adapt to, respond to, and recover from public-health threats while maintaining essential and routine health services. Contemporary evidence supports a substantial role for community-level action. A 2025 systematic review of 46 studies concerning chronic-disease management during natural disasters identified nine recurring community-based strategies. Patient education was emphasized in 24 studies, digital-health accessibility in 20, medication continuity in 18, and stakeholder communication and collaboration in 18. A separate 2024 systematic review involving 86 included studies found that trust, collaboration, inclusive communication, community structures, tailored outreach, and feedback are central to linking emergency communication with resilience.

Based on this evidence, the paper proposes a Community–Healthcare Continuity Pathway linking preparedness mapping, trusted communication, local health networks, medicine and supply continuity, digital fallback systems, transportation support, community health workers, vulnerable-person outreach, and recovery learning. The analysis argues that resilience should not transfer government responsibility to communities; rather, it should create structured partnerships between formal health services and local social capacity. Effective local emergency preparedness therefore requires both resilient health institutions and communities capable of communicating, identifying unmet needs, reaching vulnerable residents, and sustaining essential care until normal service delivery is restored.

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1. Introduction

Health emergencies do not need to reach national or international scale to disrupt essential care. A flood affecting several neighborhoods, a prolonged heatwave, a local infectious-disease outbreak, electricity failure, severe storm, wildfire, transportation disruption, or damage to a health facility can interfere with medication supplies, appointment schedules, diagnostic services, home care, emergency transport, staffing, communication, and access to primary health care. These disruptions can have consequences beyond the immediate hazard because individuals with diabetes, cardiovascular disease, respiratory illness, kidney disease, cancer, mental-health conditions, pregnancy-related needs, disabilities, or dependence on regular medication may deteriorate when ordinary health services become temporarily inaccessible. WHO consequently treats maintenance of essential and routine services as a defining component of health-system resilience rather than as a secondary activity after emergency response.

The concept of resilience has developed from a narrow focus on returning to pre-emergency functioning toward a broader understanding of the capacity to absorb disruption, adapt service delivery, transform weak structures where necessary, and continue fulfilling essential functions. Witter and colleagues argue that resilience should be interpreted critically as a dynamic property shaped by health-system relationships, resources, governance, learning, and adaptation rather than as a simple ability to "bounce back." Earlier work by Kruk and colleagues similarly emphasized that resilient systems should be able to respond effectively to shocks while maintaining core functions and continuing to deliver everyday benefits. WHO's 2024 implementation guidance reinforces this perspective by stating that resilience must be deliberately programmed and developed rather than assumed to emerge automatically from ordinary health investment.

Community resilience adds an essential local dimension to this system-level perspective. Residents, families, community health workers, voluntary organizations, faith-based groups, local associations, pharmacies, schools, social-care providers, and informal networks often possess detailed knowledge about which residents are isolated, who requires regular medication, which households lack transport, which languages are spoken locally, and which communication channels are trusted. Such knowledge is particularly important when formal emergency systems operate with incomplete or delayed information. Sahani and colleagues' 2024 realist-informed scoping review found evidence that engaging communities throughout crisis response can increase resilience and trust, while consistent communication contributes to effective response. Community resilience should therefore be understood as organized local capacity working in partnership with formal institutions, not as a justification for leaving communities to manage emergencies without adequate public resources.

Communication represents one of the principal mechanisms linking community capacity with health-service continuity. Vandrevala and colleagues reviewed 300 potentially relevant records and included 86 studies examining community resilience and health emergency communication. Their synthesis identified trust and collaboration, identification and distribution of resources, tailored communication, equity and inclusion, and community engagement and feedback as important

dimensions of the relationship. The review also cautioned against imposing top-down solutions without understanding distinct community structures, languages, power relationships, preferences, and vulnerabilities. Effective emergency communication should therefore function bidirectionally: health agencies disseminate reliable information while community networks provide real-time information concerning unmet needs, barriers, and locally appropriate responses.

2. Objectives of the Study

2.1 To Examine Community Resilience as a Health-Service Continuity Mechanism

The first objective is to examine how community networks, local organizations, community health workers, patient education, mutual-aid mechanisms, informal caregivers, and trusted communication channels can help maintain access to essential health services before, during, and immediately after local emergencies. Particular consideration is given to vulnerable people whose health depends on uninterrupted medication, monitoring, transportation, or continuing professional care.

2.2 To Identify Operational Continuity Strategies

The second objective is to identify evidence-supported mechanisms that can connect formal health systems with community resources. These mechanisms include medication preparedness, community registries, telehealth, multilingual communication, transportation coordination, alternative care locations, emergency referral pathways, volunteer networks, psychosocial support, and community-based risk communication. Evidence from disaster literature indicates that these components recur across diverse settings and should be incorporated into preparedness rather than improvised only after services fail.

2.3 To Develop an Integrated Community–Healthcare Continuity Framework

The third objective is to develop a structured pathway linking pre-emergency preparedness with immediate response, service adaptation, community outreach, and post-event learning. The framework is intended to clarify how responsibility should be distributed between health facilities, primary-care systems, local authorities, community organizations, pharmacies, transportation providers, and community members.

3. Review of Literature

3.1 Health-System Resilience and Continuity of Essential Services

The modern health-system resilience literature consistently identifies continuity of essential care as a core performance requirement. WHO describes resilience as the capacity to prevent, prepare for, detect, adapt to, respond to, and recover from public-health threats while maintaining essential and routine services. Its health-service continuity handbook similarly recommends that health facilities establish service-continuity plans in advance of emergencies, review essential functions, identify risks, and develop arrangements that can minimize disruption across multiple types of public-health emergency.

Blanchet and colleagues conceptualize resilience through capacities to absorb, adapt, and transform while maintaining system functions. These capacities are relevant to local emergencies because different forms of disruption require different responses. A short electricity outage may be absorbed using backup systems; prolonged flooding may require adaptation through telehealth or mobile

services; destruction of a clinic may require more substantial transformation through temporary facilities or revised referral pathways.

Hospital resilience research reinforces the need to consider more than infrastructure. Atighechian and colleagues' 2024 systematic review identified evolving attention to psychological and workforce dimensions of hospital resilience after COVID-19, showing that resilience depends on personnel and organizational capacity as well as physical structures. Continuity planning must therefore protect health workers, maintain communication, manage workload, and provide alternative staffing arrangements alongside ensuring medicines, power, transportation, and equipment.

3.2 Community Engagement, Trust, and Emergency Communication

Community resilience depends substantially on social relationships and the quality of interaction between institutions and residents. Bhandari and Alonge's review of community resilience in health systems emphasized the need for measurable constructs capturing how communities absorb and recover from disruption. More recent evidence has moved toward examining specific mechanisms through which community participation affects emergency performance.

Sahani and colleagues reviewed conceptual frameworks and global guidelines for community engagement in health crisis response. From 10,780 initially identified documents, 30 were included in detailed analysis. The authors concluded that evidence concerning context, mechanism, and outcomes was promising but often lacked sufficient detail to explain exactly why particular forms of engagement worked in specific settings. Importantly, the review found that mapping local stakeholders and vulnerable groups before emergencies and involving community members across response stages can build trust and support more effective implementation.

Vandrevala and colleagues similarly identified a mutually reinforcing relationship between communication and resilience. Their systematic review found that community structures can function as channels for rapid dissemination of health information, while community engagement allows formal authorities to understand local needs and adapt communication. The review's 86 included studies were dominated by medium- and lower-grade evidence, with 98.9% classified as grades B–D, indicating that the field has substantial practical knowledge but still requires stronger experimental and longitudinal evaluation. This evidence-quality limitation is important and argues against presenting community resilience as an intervention with a single universally established effect size.

3.3 Community Strategies for Maintaining Care

The most directly relevant recent evidence comes from Iyer and colleagues' 2025 systematic review of community-based chronic-disease management during natural disasters. The review selected 46 studies representing 19 countries and identified nine recurring themes: patient education, medication continuity, stakeholder collaboration, digital health, NCD-ready alerts and shelters, transportation access, language accessibility, psychosocial support, and intergenerational engagement.

Medication continuity emerged as an especially important mechanism. Eighteen studies highlighted uninterrupted medication access, with recommended strategies including anticipatory refills, community health-worker support, identification of alternative medication-distribution sites, community registries, and pharmacist involvement. Twenty studies emphasized digital-health availability, including

telehealth access, telephone follow-up, mobile health systems, population mapping, and remote monitoring. Eight studies emphasized transportation access, particularly for populations requiring accessible vehicles, oxygen, mobility equipment, or transport to special-needs shelters.

Digital care should nevertheless be treated as a continuity option rather than a universal replacement for in-person services. Smith and colleagues argued during the COVID-19 emergency that telehealth is more likely to function effectively during emergencies when it has already been integrated into routine care, supported by workforce training, financing, and appropriate redesign of services. This observation is directly relevant to local preparedness: emergency technologies work best when users, clinicians, and institutions are familiar with them before disruption occurs.

4. Research Methodology

4.1 Research Design

The study adopted a structured integrative review and conceptual analytical methodology. This design was selected because no original emergency-event dataset or participant-level survey was supplied and because the research question requires integration of evidence from health-system resilience, primary health care, disaster medicine, community engagement, risk communication, digital health, and chronic-disease continuity.

Peer-reviewed and authoritative evidence available up to August 10, 2026 was considered. Particular emphasis was placed on recent systematic and scoping reviews, WHICH guidance, health-system resilience literature, community-engagement evidence, and studies directly concerned with continuity of health care during emergencies. Search concepts included community resilience, healthcare continuity, health-service continuity, local emergency, disaster health, primary health care resilience, community engagement, medication continuity, telehealth emergency, and chronic disease disaster.

4.2 Analytical Domains

Table 1: Framework for Assessing Community-Supported Healthcare Continuity

Continuity Domain	Principal Risk During an Emergency	Community/System Response
Essential medication	Supply disruption or inability to reach pharmacy	Advance refills, alternative distribution, pharmacist networks
Primary care	Facility closure or overload	Alternative clinics, temporary PHC, teleconsultation
Chronic-disease monitoring	Missed appointments and reduced surveillance	Remote monitoring, community health-worker follow-up
Emergency communication	Network failure, mistrust, misinformation	Multichannel and locally trusted communication
Transportation	Road closure, evacuation, mobility barriers	Community transport and accessible evacuation plans
Vulnerable	Isolation or inability to request help	Registries, targeted outreach, home

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populations		visits
Mental and psychosocial care	Stress, trauma, social isolation	Peer support and community psychosocial services
Health workforce	Absence, overload, psychological strain	Cross-training, reserve staffing, local support
Information continuity	Lost records or fragmented referrals	Interoperable records and backup documentation
Recovery	Delayed restoration of routine services	Community feedback, monitoring and adaptive recovery

4.3 Evidence Synthesis and Ethical Position

Evidence was organized according to the phase of the emergency and its direct relevance to health-care continuity. Strategies were interpreted across preparedness, response, adaptation, and recovery rather than treated as isolated interventions.

The study did not generate new human-subject data and therefore does not present simulated patient outcomes as empirical results. Quantitative values used in the analysis and graph are derived from published systematic-review evidence. Because this manuscript is an evidence synthesis and conceptual framework rather than an original human-participant investigation, new institutional ethics approval was not applicable.

5. Analysis

5.1 Frequency of Community-Based Continuity Strategies

Iyer and colleagues' 2025 systematic review offers a useful quantitative evidence map of the mechanisms most frequently discussed in disaster-related community interventions. Among the 46 included studies, patient education was cited in 24 studies, digital health in 20, medication continuity in 18, and communication or stakeholder collaboration in 18. Transportation was highlighted in eight studies, intergenerational engagement in six, language accessibility and psychosocial support in five each, and NCD-ready alerts or shelters in four.

Table 2: Evidence Profile of Community-Based Healthcare Continuity Mechanisms

Continuity Strategy	Number of Studies	Continuity Function
Patient education	24	Improves preparedness and self-management
Digital health	20	Maintains remote clinical contact
Medication continuity	18	Protects ongoing treatment
Stakeholder communication/collaboration	18	Coordinates resources and referrals
Transportation access	8	Maintains physical access to care

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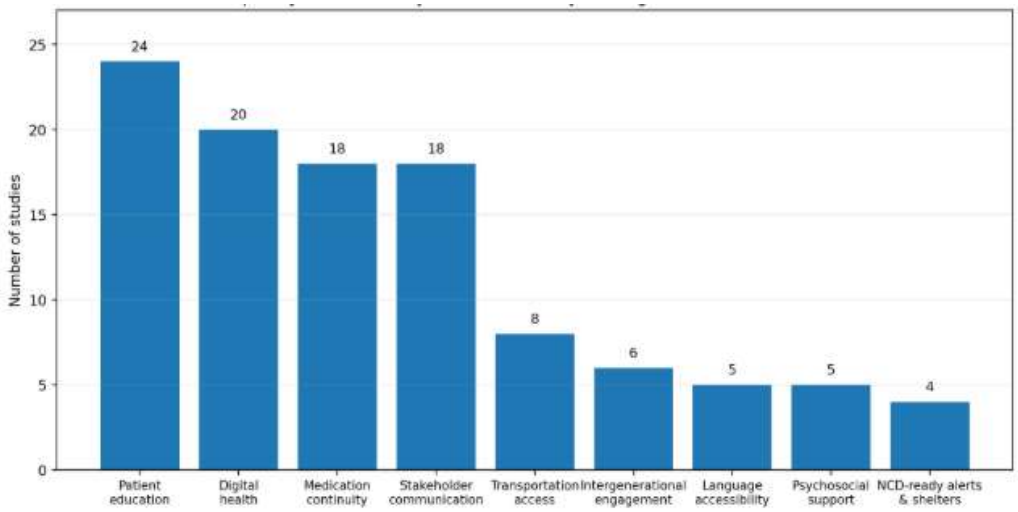
Intergenerational engagement	6	Extends outreach to vulnerable residents
Language accessibility	5	Supports equitable communication
Psychosocial support	5	Protects psychological and behavioral stability
NCD-ready alerts and shelters	4	Supports high-risk patients during acute disruption

5.2 Evidence Profile of Continuity Priorities

Figure 1: Frequency of Community-Based Continuity Strategies in Disaster Literature



The pattern is particularly significant for local emergencies because many smaller disruptions do not require wholesale replacement of the health system. Instead, resilience may depend on keeping ordinary pathways functioning through temporary alternatives: ensuring medication can still be obtained, maintaining communication with clinicians, arranging transport, identifying vulnerable residents, and redirecting patients to functioning sites.

5.3 Proposed Community–Healthcare Continuity Pathway

The evidence synthesized in this study supports the following operational sequence:

Local Hazard Identification

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Pre-Event Mapping of Essential Services and Vulnerable Residents

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Activation of Trusted Community Communication Networks

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Assessment of Facility, Medication, Workforce, Transport, and Digital Disruption

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Prioritization of Time-Sensitive Essential Services

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Community Health Worker / Pharmacy / Telehealth / Transport Mobilization

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Alternative Service Delivery and Targeted Outreach

↓

Continuous Community Feedback and Needs Verification

↓

Restoration of Routine Services

↓

Post-Emergency Review and Preparedness Improvement

The pathway intentionally begins before health services fail. Whose continuity-planning approach similarly emphasizes preparedness in advance of public-health emergencies, while its 2025 temporary-PHC guidance demonstrates that rapid alternative infrastructure can maintain services where permanent facilities are damaged or unavailable.

6. Discussion

6.1 Community Resilience Should Complement, Not Replace, Health-System Responsibility

The principal implication of this study is that community resilience should not be interpreted as an expectation that individuals and local organizations compensate indefinitely for inadequate formal health services. Vandrevala and colleagues specifically note concerns about shifting excessive responsibility toward communities and argue for partnership and adequate support rather than simple devolution. A resilient community requires reliable institutions with which to cooperate.

The strongest model is therefore co-produced continuity. Health authorities retain responsibility for essential-service planning, medicines, clinical standards, surveillance, infrastructure, financing, and emergency coordination. Community structures contribute local intelligence, outreach capacity, culturally appropriate communication, identification of vulnerable residents, and rapid feedback concerning service barriers.

This relationship can be particularly valuable in the first hours or days after a local emergency, when centralized systems may not yet possess complete information. Community organizations may know which pharmacy is operating, which road is blocked, which older residents live alone, which patient needs dialysis transport, or which families require communication in a different language.

6.2 Continuity Requires Redundancy Across Multiple Care Channels

Resilient systems cannot depend on a single clinic, communication method, supply chain, transport route, or digital platform. Local disruption becomes clinically dangerous when failure of one component eliminates access to care entirely.

Continuity therefore requires planned redundancy. In-person primary care can be supplemented temporarily by telehealth; centralized medication distribution can be supported by local pharmacies or pre-event refills; electronic alerts can be supplemented by telephone, radio, community health workers,

and door-to-door outreach; ordinary transport routes can be supplemented through community vehicles or accessible evacuation arrangements.

WHO's temporary primary-care guidance illustrates this principle physically: modular facilities can be deployed rapidly, adapted, scaled, and integrated within existing systems while permanent services are restored. Telehealth provides a parallel digital form of redundancy, although Smith and colleagues caution that it should be normalized before emergencies if it is expected to perform reliably when crises occur.

Medication continuity deserves particular attention because interruption can convert stable chronic conditions into emergencies. Eighteen studies in the 2025 disaster review identified continuity of medication as a priority, including anticipatory refills, community-health-worker contact, registries, alternative distribution locations, and pharmacist support.

6.3 Equity and Vulnerability Must Shape Local Preparedness

Community resilience can be overstated when it is measured only through average community capacity. Emergencies affect residents differently according to disability, age, income, language, housing, transportation, digital access, chronic disease, social isolation, immigration circumstances, and existing access to care.

The disaster evidence demonstrates this clearly. Five studies in the Iyer review emphasized multilingual information, while eight highlighted transportation accessibility. Vandrevala and colleagues likewise identify inclusion and equity as core features of resilient emergency communication.

Preparedness should therefore identify who will lose access first when a local service fails. A digital continuity system is not resilient for a patient who lacks internet access. An emergency shelter is not sufficient for a person using oxygen if the shelter cannot accommodate oxygen equipment. A medication plan fails when advance refills are financially or legally inaccessible. An alert has limited value when issued in a language residents do not understand.

Equity-oriented resilience consequently requires targeted rather than identical interventions.

6.4 Evidence Limitations and Future Research

The literature remains limited by methodological heterogeneity. The Iyer review contained only a small proportion of quantitative studies and explicitly identified limited quantitative outcome data as a major gap. Vandrevala and colleagues similarly found that 98.9% of the evidence in their review was medium to low grade. Sahani and colleagues found that even major guidelines frequently lacked sufficiently detailed analysis explaining how particular engagement mechanisms produce outcomes in specific contexts.

Future research should therefore evaluate continuity interventions prospectively using measurable outcomes such as missed medication days, time to service restoration, avoidable emergency-department use, interruption of dialysis or maternal care, referral completion, telehealth utilization, mortality, hospitalization, patient-reported continuity, and equity of access.

The field also requires better measurement of community-health-system resilience. Espmark and colleagues' updated review identified 21 components that could contribute to operational measurement

of community resilience, indicating continued progress but also the need for standardized and context-sensitive indicators.

7. Conclusion

Community resilience is an important but frequently under-operationalized component of healthcare continuity during local emergencies. Its contribution extends beyond general preparedness and includes concrete mechanisms capable of sustaining health services: patient education, medication continuity, digital health, community health workers, trusted communication, transportation, multilingual outreach, psychosocial support, local partnerships, and alternative care sites.

The evidence indicates that resilient health systems and resilient communities should be developed together. WHO explicitly frames health-system resilience around maintaining essential and routine services while responding to public-health threats, and contemporary community-engagement research shows that local participation can improve trust, communication, resource identification, and response capacity.

The most useful model is therefore neither fully centralized nor dependent on community self-reliance. Formal health institutions should maintain responsibility for clinical services, infrastructure, supplies, standards, and coordination, while community networks provide local knowledge, outreach, communication, and support for residents who may otherwise become disconnected from care.

Local emergency plans should consequently identify essential services in advance, map vulnerable populations, establish multiple communication channels, protect medication and supply continuity, maintain digital and physical alternatives for care, develop accessible transportation arrangements, and create formal partnerships with community organizations before emergencies occur. Resilience should ultimately be measured not only by how rapidly a health system returns to normal, but by how effectively it protects essential care while normal conditions are unavailable.

References

1. World Health Organization, *Building Health System Resilience to Public Health Challenges: Guidance for Implementation in Countries*. Geneva, Switzerland: WHO, 2024.
2. World Health Organization, *Health Service Continuity Planning for Public Health Emergencies: A Handbook for Health Facilities*. Geneva, Switzerland: WHO, 2021, ISBN 978-92-4-003333-7.
3. World Health Organization Regional Office for Europe, *Temporary Primary Health Care Structures in Emergencies*. Copenhagen, Denmark: WHO Regional Office for Europe, 2025, WHO/EURO:2025-11371-51143-77893.
4. T. Vandrevala, E. Morrow, T. Coates, R. Boulton, A. F. Crawshaw, E. O'Dwyer, and C. Heitmeyer, "Strengthening the relationship between community resilience and health emergency communication: A systematic review," *BMC Global and Public Health*, vol. 2, art. 79, 2024, doi: 10.1186/s44263-024-00112-y.
5. M. K. Sahani, H. Maat, D. Balabanova, M. Woldie, P. Richards, et al., "Engaging communities as partners in health crisis response: A realist-informed scoping review for research and policy," *Health Research Policy and Systems*, vol. 22, art. 56, 2024, doi: 10.1186/s12961-024-01139-1.

6. N. Houghton, E. Báscolo, C. Zavaleta, W. Flores, M. Cunningham Kain, C. I. Vance Mafla, and J. Haggerty, "Community-driven strategies for primary health care resilience in response to shocks in Latin America and the Caribbean: A scoping review and expert consultation," *The Lancet Regional Health – Americas*, vol. 50, 101236, 2025, doi: 10.1016/j.lana.2025.101236.
7. C. A. Herrera et al., "No time to wait: Resilience as a cornerstone for primary health care across Latin America and the Caribbean," *The Lancet Regional Health – Americas*, vol. 50, 101240, 2025, doi: 10.1016/j.lana.2025.101240.
8. S. Witter, S. Thomas, S. M. Topp, E. W. Barasa, M. Chopra, D. Cobos, et al., "Health system resilience: A critical review and reconceptualisation," *The Lancet Global Health*, vol. 11, no. 9, pp. e1454–e1458, 2023, doi: 10.1016/S2214-109X(23)00279-6.
9. M. E. Kruk, M. Myers, S. T. Varpilah, and B. T. Dahn, "What is a resilient health system? Lessons from Ebola," *The Lancet*, vol. 385, no. 9980, pp. 1910–1912, 2015, doi: 10.1016/S0140-6736(15)60755-3.
10. K. Blanchet, S. L. Nam, B. Ramalingam, and F. Pozo-Martin, "Governance and capacity to manage resilience of health systems: Towards a new conceptual framework," *International Journal of Health Policy and Management*, vol. 6, no. 8, pp. 431–435, 2017, doi: 10.15171/ijhpm.2017.36.
11. S. Bhandari and O. Alonge, "Measuring the resilience of health systems in low- and middle-income countries: A focus on community resilience," *Health Research Policy and Systems*, vol. 18, art. 81, 2020, doi: 10.1186/s12961-020-00594-w.
12. G. Atighechian, A. Rahimi, M. Sattari, and M. Mohammadi, "Dimensions of hospital resilience emphasized during the COVID-19 pandemic response: A systematic review," *Health Science Reports*, vol. 7, no. 8, e2300, 2024, doi: 10.1002/hsr2.2300.
13. M. A. Alanazi, "Challenges and strategies in maintaining continuity of care for chronic disease patients by emergency nurses during disasters," *International Nursing Review*, 2025, doi: 10.1111/inr.70029.
14. J. Espmark, D. D. Saulnier, R. Šakić Trogrlić, and S. A. Ismail, "Assessing and measuring community health system resilience – an updated scoping review of approaches," *BMC Health Services Research*, vol. 26, art. 34, 2025, doi: 10.1186/s12913-025-13802-6.
15. World Health Organization, "Health Systems Resilience," WHO Primary Health Care Programme, accessed Aug. 10, 2026.
16. World Health Organization, "Implementing health emergency and disaster risk management," WHO Health Emergencies Programme, accessed Aug. 10, 2026.