

## From Relief to Resilience: Strengthening Disaster Preparedness for Health and Education Sectors

The destruction caused by recent calamities shows one of the long-standing global failures: excessive dependence on short-term aid and insufficient investment in preparedness and strength. Health and education, both vital in a crisis, are particularly prone to disruption. The transition to proactive resilience instead of reactive relief is not only essential but also possible, as there is increasing evidence to support this notion.

Health systems are the first line of defense during emergencies. A 2025 study has developed a practical Emergency Preparedness and Health System Resilience Assessment Tool that allows governments to identify gaps and take resilience-building actions first.<sup>1</sup> Conceptually, resilience is now more clearly defined: a recent analysis clarifies qualities, including absorptive, adaptive, and transformative capacities that collectively define the way systems withstand shocks.<sup>2</sup> However, despite conceptual advances, operational issues remain.

As health response anchors, hospitals are repeatedly tested with surge capacity during disasters. A systematic review is a summary of evidence on the concept of surge preparedness, which identifies factors such as limited resources, poor communication, and supply bottlenecks.<sup>3</sup> Further empirical data provided indicate that leadership, community linkages, and planning are the factors that greatly influence the functional preparedness of hospitals.<sup>4</sup> This is important because resilience is constructed not only by infrastructure but also by governance and practice.

Human resources are also vital to preparedness. A systematic analysis showed the gaps in disaster training of healthcare professionals, with many lacking practical skills for emergencies, despite theoretical knowledge.<sup>5</sup> Capacity development through education and training is therefore important. Encouragingly, a study of disaster-preparedness education identifies novel ways of conducting community education, ranging from community drills to curriculum integration.<sup>6</sup>

Schools themselves are a critical part of disaster preparedness. A systematic review of school Disaster Risk Reduction (DRR) programs reported positive results in risk perception in children, evacuation knowledge, and preparedness behaviors, though scaling these programs remains uneven.<sup>7</sup> Adult and

continuing education is also important: a study demonstrates that training after formal schooling increases the resilience of society, especially in vulnerable populations where preparedness literacy is low.<sup>8</sup> Collectively, these research findings suggest that preparedness should be lifelong and multisectoral.

Assessment tools are necessary at the practitioner level to discover strengths and weaknesses. Recently, a study introduced a Disaster Management Assessment Tool that was validated with health professionals, providing a quantifiable means to monitor competencies and preparedness over time.<sup>9</sup> Institutional-level measurement is also important. The study of hospital resilience indicators highlighted the need for standardized indicators to track progress, from staffing and supply preparedness to adaptability and speed of recovery.<sup>10</sup>

Another important frontier is the education of future health professionals. The frequency of disasters is increasing due to climate change, and nursing curricula are starting to adjust. According to a study, climate resilience and disaster preparedness training are now being incorporated in nursing education to train future nurses for crisis handling.<sup>11</sup> Simulation training is also promising: a controlled trial of the Integrated Simulation Experiential Learning Disaster Nursing (ISEL-DN) program reported significant improvement in students' knowledge, confidence, and practical skills in disaster response.<sup>12</sup>

Hospitals and professionals need to be prepared, but front-line responders also require psychological resilience. The systematic review of disaster rescue worker interventions provides evidence of the efficacy of resilience training and mental health support as means of enhancing operational performance in times of crisis.<sup>13</sup> Yet, resilience cannot be created alone: agency coordination is crucial. According to a study on the inefficiencies in disaster response communication, the discontinuous information flow and the absence of a standard protocol are typically used to disrupt health and education sector preparedness.<sup>14</sup> Low- and middle-income countries (LMICs) have the most acute vulnerabilities, which are the most urgent. A systematic review indicates that LMICs tend to have fewer resources to invest in prevention and preparedness and rely on reactive relief. However, there is evidence that even small investments in preparedness, such as early-warning

systems, training, and integrated planning, will have disproportionate health and education outcomes.<sup>15</sup>

Together, these studies demonstrate a definite trend: resilience needs to be proactively constructed across sectors. In health terms, it is the incorporation of preparedness in hospital planning, workforce training, and measuring resilience. In the case of education, it must involve scaling of DRR curricula, community preparedness, and the provision of professionals in both fields with the skills and mental resilience to respond.

The transition to resilience requires a change in the system. It involves going beyond emergency relief mobilization to long-term investments in capacity, governance, and integrating health and education. Well-built systems can endure shocks, evolve, and adapt to new risks through learning. In the absence of this change, disasters will continue to destroy human capital, deepen inequalities, and create vulnerability cycles. Through it, societies can safeguard the health and learning prospects of their most susceptible populations to prevent the next calamity from obliterating decades of progress.

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