

is limited understanding of the distinctive contribution they make and the ways they cope. Women are the key drivers of livelihood, therefore, the economic losses resulting from natural hazards may have massive impacts on their mental health. This study examines how the self-help women's groups in rural Nepalese communities provide economic, social, socio-political, and public-health support to build safer, sustainable, and resilient communities.

**Method:** In-depth open-ended interviews were conducted between January 2021–April 2021 with grassroots women leaders (n=8) representing their (women's/mother's) group inquiring about their activities related to risk reduction and perspectives on how they cope during natural hazards. The findings were analyzed and discussed using two analytical frameworks namely, the Sustainable Livelihood Approach (SLA) and Bronfenbrenner's Socio-Ecological Model (SEM) as scaffolds. Data analysis followed the thematic analysis technique.

**Results:** Two major themes emerged from the in-depth interviews: 1) Women are doing their part and 2) Help-seeking behavior as a barrier and facilitator. The traditional female household roles such as cooking, feeding, and caring during pre-disaster states are extended to rescuing, protecting, laborious cleaning, and providing physical and emotional support during disasters. The pre-and post-disaster care responsibility and help-seeking behavior have implications for health, safety, well-being and sustainability. The findings also suggest the inevitability of self-care for women during and post-disasters.

**Conclusion:** The care roles of women involve both livelihood and health benefits for the family and the entire community. To mitigate the physical and mental health burden for women amplified during natural hazards, self-care should be a critical component of advocacy in disaster awareness campaigns and help-seeking behavior should be promoted as a strength rather than insufficiency.

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### Systematically Identifying and Evaluating Strategies for Strengthening Community Resilience

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**Introduction:** Vulnerable populations were the most impacted by the COVID-19 pandemic. This included those with underlying health conditions, self-employed, low-income, people with limited access to health care, and the elderly. To capture these lessons and identify resilience actions, the Health Emergency and Disaster Risk Management (Health EDRM)

Framework was used to guide the application of the Public Health System Resilience Scorecard (Scorecard).

**Method:** This study was conducted in Australia, Bangladesh, Japan, Slovenia, Turkey, and the United States. Participants included emergency professionals, doctors, nurses, environmental health specialists, researchers, and government officials. The Scorecard was used to rank the level of preparedness from 0–5 (5 the highest) for the public health system resilience indicators. Following the individual workshops, recommendations were collated and interpreted to develop consolidated priority actions.

**Results:** The priority actions related to surge capacity, mental health, ecosystems, societal needs, and high-risk populations. To address surge capacity issues, determining whether existing disaster structures have the capacity to provide support for hospitals during patient surges. This could include services that enable telehealth and primary health care to support hospitals during a crisis. Mental health services at the local government level should be evaluated and awareness of ecosystem risks in urban and rural areas needs to increase. Strategies for achieving reciprocal trust are required to enable uptake of public health information, and the extent at which pre-existing chronic health issues are likely to exacerbate needs to be understood and addressed.

**Conclusion:** This study revealed several areas for strengthening public health system resilience. Priority actions relate to addressing needs relating to surge capacity, mental health, ecosystems, societal needs, and high-risk populations. This serves as a framework for transforming public health systems to become more adaptive, flexible, and focused on enabling societies to function at the highest possible level when responding to a disaster or pandemics.

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### A Descriptive Analysis of the Health Care Aspects of Industrial Disasters Around the World

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**Introduction:** Industrial disasters can have a myriad of repercussions ranging from acute deaths, injuries, and long-term adverse health impacts on nearby populations to political fallout and environmental damage. This is a descriptive epidemiological analysis of industrial disasters occurring between 1995 and 2021 which may provide useful insight for health care systems and disaster medicine specialists to better prevent and mitigate the effects of future industrial disasters.

**Method:** Data was collected using a retrospective database search of the Emergency Events Database (EM-DATS) for all industrial disasters occurring between January 1, 1995, and December 31, 2021.

**Results:** 1,054 industrial disasters were recorded from 1995 to 2021. The majority of these disasters occurred in Asia (720, 68.3%), with 131 (12.4%) in Africa, 107 (10.2%) in Europe,

94 (8.9%) in the Americas, and 2 (0.2%) in Oceania. Half of these disasters were explosions (533, 50.6%), 147 (13.9%) were collapses, 143 (13.6%) were fires, 46 (4.4%) were chemical spills, 41 (3.9%) were gas leaks, and 34 (3.2%) were poisonings. There were 6 (0.6%) oil spills and 3 (0.3%) radiation events.

**Conclusion:** A total of 29,708 deaths and 57,605 injuries were recorded as a result of industrial disasters and they remain a significant contributor to the healthcare risks of both workers and regional communities. The need for specialized emergency response training, the potential devastation of an industrial accident, and the vulnerability of critical infrastructure as terror targets highlight the need to better understand the potential immediate and long-term consequences of such events and to improve healthcare responses in the future.

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### Data Disaster to Disaster Data: Outputs of the Inter-Agency Expert Group Disaster-related Statistics (DRS) Pilot

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**Introduction:** A Hazard Definition and Classification Review conducted by the UN Office for Disaster Risk Reduction (UNDRR) and International Science Council (ISC) resulted in publication of Hazard Information Profiles (HIPs). The HIPs provide groundwork for developing a statistical framework enabling better understanding of the true burden of hazards globally. Furthermore, standardized data is critical for effective monitoring of the Sendai Framework, Sustainable Development Goals, and Paris Agreement on Climate Change.

Following the publication of the HIPs, governments and National Statistical Offices (NSOs) have been encouraged to review their systems for classifying, monitoring and reporting on disaster risk reduction with the aim to gradually implement the HIPs in databases and reporting systems.

The aim of the pilot is to provide statistical feedback on the applicability of the reviewed hazard classification and its HIPs.

**Method:** The DRS pilot utilizes mixed-qualitative methods:

- Global stakeholder workshops
- Literature review to understand the gaps and good practice
- Utilizing snowball methodology to cascade a survey to DRS international experts.
- Country-level expert focus-groups.
- In-country pilots (with Low, Middle, and High-income countries).
- Delphi Methodology with expert stakeholders to hone recommendations

**Results:** 596 responses to the survey from across 38 countries and 90 papers were identified for literature review. Survey initially sent to 120 stakeholders, and snowball methodology increased survey reach, particularly to Global South colleagues. Expert stakeholder and country-level focus groups identified a series of good practices and recommendations enabling step-

change towards a standardized global statistical framework. Delphi methodology to refine recommendations is underway.

**Conclusion:** The DRS pilot has raised global awareness of the importance of using the HIPs in developing a robust statistical framework with usable disaster-related statistics. This will enable greater accuracy of data contributing to Sendai Framework targets A-D. Results of the pilot being used to inform the Office of National Statistics-UKHSA-Wellcome collaboration on developing Standards for Official Statistics on Climate-Health Interactions in Africa.

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### Transforming Disaster and Emergency Health Policy for Contemporary Hazard Threats—a Multi-country Review

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**Introduction:** Strengthening national disaster management legislation and policy is critical for preventing and reducing catastrophic health effects from the growing threat of natural hazard disasters. Although evaluations of the effectiveness of legal and policy instruments are rarely published, similar approaches continue to be applied universally by governments to align their response to disaster impacts. This study analyzed and contrasted the effect of disaster legislation and policy on the emergency health and medical response to six complex natural hazard disasters, including typhoon, earthquake, flood, smoke haze, thunderstorm asthma and the COVID-19 pandemic.

**Method:** The study applied qualitative multi-case study methodology and used a standardized program logic model to synthesize and analyze the effect of national disaster legislation and policy on emergency health and medical responses. Events were case-bounded by date, more than 9,000 casualties, and local emergency responses provided health and medical care.

**Results:** Four themes emerged critical to health system response. Where legislation and policy provided clear separation of powers, systems delineated roles and responsibilities, provided clarity and process for assessment, resource acquisition, and operational mandates. Policies that created dedicated local networks and included non-health related organizations, accelerated coordination of crucial health functions for rapid mobilization and prioritization for affected populations. In all but one case, the hazard was closely monitored, already affected communities, and catastrophic risk to life understood, before the declaration and statutory powers were invoked.

**Conclusion:** Using ‘declarations’ as the legal instrument to initiate ‘whole of government’ resources in disasters requires urgent review, especially where advanced hazard monitoring systems exist. Disaster and emergency health policy should support action orientated toward exposure mitigation, inclusion of non-traditional health actors and partnership building. International policy mechanisms are required to address emerging health threats not locally prioritized and advance regional cooperation agreements when the impact of hazards harm populations outside geographic boundaries.

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