Editorial

Challenges of Responsible Research and Open Science in Health Emergencies and Disasters

Hamidreza Khankeh[1, 2*]

1. Department of Health in Emergency Disaster, Faculty of Social Health, University of Social Welfare & Rehabilitation Sciences, Tehran, Iran.
2. QUEST Center for Responsible Research, Berlin Institute of Health at Charité, Berlin, Germany.

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Introduction

Emergencies and disasters (natural, pandemic-related, conflict-related, climate-related, etc.) pose urgent threats to health and demand rapid evidence generation and response. In this volatile and unstable context, conducting responsible research—that is, research grounded in integrity, ethics, equity, and social value—is both critical and challenging. International frameworks for health emergency and disaster risk management (Health-EDRM), such as the Sendai Framework, emphasize community engagement and evidence-based interventions. However, these depend on research that is scientifically valid and ethically sound. As the world Health Organization (WHO) guidance notes, ethical guidelines in Health-EDRM are "tools to promote more equal researcher–participant partnerships and uphold integrity" throughout the research life cycle, from planning to dissemination. Yet real disasters put these ideals to the test: urgent timelines, damaged infrastructure, security threats, and vulnerable populations can strain standard ethics and governance processes. This letter analyzes the key scientific, ethical, methodological, and governance challenges to conducting responsible research in emergencies and disasters and suggests how stakeholders (researchers, institutions, journals, ethics bodies, and policymakers) can address them.

Time pressure and scientific rigor in the field of emergency and disaster

Emergencies create a "rush to answer questions and solve problem" that can compromise rigor. During COVID-19 and other crises, there was immense pressure to produce vaccines, medical treatments, and data quickly ("fast science"). This urgency can lead to poorly designed studies, inadequate peer review, and "garbage in, garbage out" findings. Editors at some well-known and highly prestigious journals, such as The Lancet, noted that COVID-19 "demonstrated the desperate need to accelerate efforts for greater data oversight and transparency." Poor verification in one high-profile case "resulted in loss of precious resources and time during a critical global emergency". In disasters, the difficult circumstances pose numerous challenges to conducting ethically responsible research: Participants may be traumatized or incapacitated, health infrastructure may be damaged, and preferred study designs may be impossible to implement. Yet it is imperative to uphold scientific validity; research should still "yield scientifically valid results under the challenging and often rapidly evolving conditions of disasters".

*** Corresponding Author:**
Hamidreza Khankeh, Professor.
Address: *Department of Health in Emergency Disaster, Faculty of Social Health, University of Social Welfare & Rehabilitation Sciences, Tehran, Iran.*
E-mail: *hamidreza.khankeh@bih-charite.de*

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Key issues: The tension between speed and rigor under uncertain and chaotic situations means that results must be scrutinized; premature or erroneous conclusions can mislead responses. Publication bias is common ("disaster-driven" opportunistic studies may flood journals), and predatory or highjacked journals may exploit the crisis. To counteract this, accelerated yet robust peer review is needed, and funders must resist rewarding sheer output over quality and trustworthiness. Operationally, researchers should pre-plan studies and data protocols (e.g. pre-registrations and rapid review standing committees) for plausible scenarios so that, when disasters strike, data collection can proceed ethically and with audit trails. Publishers and funders (including responsible research assessment (RRA) advocates) should reward research quality, reproducibility, and social relevance over quantity in this critical field.

Ethical and governance challenges

Emergencies and disasters strain conventional research governance. WHO guidance emphasizes that disaster research "must involve ethical considerations" and that research integrity principles must be applied at every step, not treated merely as a box to check. However, emergencies often lack strong monitoring systems: ethics committees may not exist locally or may be overburdened. Research in fragile, underdeveloped, and low-resource settings can fall outside usual regulatory safeguards. Researchers working in disasters often face conflicts between humanitarian priorities and research goals and must navigate "fragile political and social situations." They warn that during outbreaks (e.g. Ebola), there is "considerable pressure to conduct research in these situations" (due to high mortality and urgency), whereas in other disasters, like earthquakes, there may be "scepticism or hostility" toward researchers.

Data privacy, sharing, and transparency

Data management and transparency are major challenges in all fields. In disasters, data are often scarce, fragmented, and sensitive. Collecting and sharing data can encounter legal, ethical, and cultural barriers (e.g. patient privacy laws and data ownership). We believe that without the disclosure of "raw data," fraud, errors, paper mills, and research misconduct can go unchecked, consuming "precious resources and time." Yet data sharing and open data themselves raise privacy concerns. For instance, contact-tracing apps and mobile data analytics, while powerful, have also triggered public anxiety about surveillance and data commodification.

Open science frameworks can mitigate these problems, even in the fields of emergency and disaster research.

Equity, community engagement, and trust

Disasters disproportionately affect vulnerable and fragile communities, including low-income, minority, and conflict-affected communities. However, these communities are often underrepresented in research design, implementation, and authorship, despite the recommendations of Patient and Public Involvement principles. This "research colonialism" creates equity and ethical problems in the scientific process. Truly responsible research requires the strong participation of local stakeholders, including affected communities, local researchers, NGOs, and health workers. In their recent studies, Khankeh et al. have repeatedly highlighted how community participation is key to resilience and relevance. However, our contexts show that such participation is fraught: studies in Iran found that poor risk perception, trauma, mistrust, and low social capital hinder community engagement in disaster risk management. Globally, engaging communities during emergencies and disasters is difficult: communication infrastructure may be down, trust may be low, and researchers themselves may be outsiders. Nevertheless, without community involvement, studies may miss cultural nuances, local needs, and local value, reducing their social value and potentially causing harm.

Responsible research assessment and culture change

Underlying many challenges is the incentive structure of science and research assessment. Traditional quantitative metrics, such as publication counts and journal impact, can motivate researchers to cut corners. Movements, like RRA and Open Science aim to realign incentives toward integrity, quality, and societal value and needs. In disaster research, this means that funding agencies and institutions should reward researchers for engaging communities, sharing data, and conducting ethically rigorous studies—not just for publishing in high-impact journals. For example, hiring or promotion criteria could consider public health impact, policy influence, and community priorities.

Practical steps include signing DORA (Declaration on Research Assessment); adopting narrative CVs that recognize social responsiveness; providing grants specifically for disaster ethics training and community engagement; and requiring open data practices. Journals, including HDQ, can support RRA by publishing null or negative results from related studies, valuing method-

ological rigor during peer review, and requiring transparency (e.g. data availability statements). In sum, shifting the culture in line with RRA principles will help ensure that, during disasters, appropriate research is conducted responsibly and effectively, in accordance with research integrity principles.

Conclusion

Conducting responsible health research during emergencies and disasters is a complex ethical endeavor. The urgency of disaster situations amplifies scientific, ethical, and operational pressures, but these pressures cannot justify cutting corners. As multiple analyses have shown, maintaining integrity, transparency, and a focus on communities is essential to building trust and producing useful, trustworthy knowledge. Based on the discussion above, we recommend the following:

1) Researchers should plan for disasters scenarios in advance (e.g. ethical protocols, rapid-review pathways, and data-sharing agreements) and commit to open and participatory research practices. Training in disaster ethics, responsible research practices, and cultural competence is essential. 2) Institutions and funders must invest in flexible, disaster-ready research governance (e.g. standing ethics committees for emergencies) and fund ethics and PPI components. Career incentives should reward impactful, collaborative, and transparent studies. 3) Journals and publishers, including HDQ, should enforce data transparency, support open access and the writing and sharing of protocols, and explicitly value ethical and community-engaged research in their review criteria. They can serve as "duty-bearers" during disasters by refusing to publish unverifiable or unethical studies. 4) Ethics committees and regulators should establish expedited review mechanisms for emergencies and disasters without waiving core protections. They should involve local stakeholders in governance decisions and ensure privacy safeguards, even when data sharing is needed, especially for sensitive subject matter. 5) Policymakers at the national and global levels must strengthen inclusive disaster research infrastructure: support data hubs and repositories, harmonize privacy laws related to disasters, and integrate research into preparedness plans. They should endorse open science policies and practices and encourage the adoption of RRA in national research assessment.

No simple solution exists, but the convergence of WHO Health-EDRM, UNESCO open science, Science Europe's RRA, and global disaster resilience frameworks suggests a path: research in emergencies and disasters must be ethically rigorous, transparent, inclusive, socially accountable, and trustworthy. By adopting open science and RRA principles even under the pressure of disaster situations, we can ensure that urgent research remains trustworthy and truly serves affected communities and global health.

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