

- Center for Research and Training in Disaster Medicine, Humanitarian Aid and Global Health, Università Del Piemonte Orientale, Novara, Italy
- Department for Sustainable Development and Ecological Transition, Università Del Piemonte Orientale, Vercelli, Italy

Introduction: Considering the need for hospital disaster preparedness post-Nepal earthquake 2015, the Ministry of Health and Population of Nepal developed a Hospital Disaster Preparedness and Response Plan (HDPRP) for mass casualty management. However, until now, there is no scientific literature on how the district hospitals, which are the major health service providers in Nepal, implemented their HDPRP during mass casualty incidents (MCIs). So, this study aims to understand how the HDPRP was implemented during MCIs in three district public hospitals of Nepal.

Method: A mixed sequential QUANT-QUAL study was designed. Out of seven districts under the severely hit category by Nepal Earthquake 2015, three districts were selected randomly. For the quantitative component, the WHO hospital emergency response checklist was adapted which was self-administered in each hospital. Based on a scoring system, each hospital was placed in one of three categories (effective, insufficient, unacceptable), to assess the level of HDPRP implementation. For the qualitative component, semi-structured interviews were conducted to understand how the HDPRP was implemented in each hospital. An inductive thematic analysis was carried out. All information was collected for the most recent management of MCI reported in the hospital.

Results: Out of three hospitals, two hospitals have effectively implemented their HDPRP, whereas one has insufficient implementation. Three themes emerged during the data analysis: enablers in implementation of HDPRP, barriers in implementation of HDPRP, and recommendations for the future. Multiple enablers and barriers were identified for the implementation of HDPRP, and the recommendations were identified for the hospital, hospital staff, and external stakeholders.

Conclusion: Implementation of HDPRP as per the protocol is difficult due to many external and internal factors that arise while managing the MCIs. The findings of this study provide the basis for the Ministry of Health and Population and district hospitals for the future update of HDPRP and planning of MCIs.

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Educating the Public for the Nuclear Reality: Understanding Likely Behaviors in the Aftermath of a Nuclear Detonation

Morgan Taylor MPH, AEMT¹, Stephanie Andino¹, Zachary Zwald PhD, MA², Jeffrey Berejikian PhD, MS¹

- University of Georgia, Athens, USA
- The University of Houston, Houston, USA

Introduction: Amid the escalating nuclear arms race in the latter half of the 20th century, civil defense preparedness drills, commonly known as “Duck-and-Cover” drills, were practiced throughout classrooms in the United States. Since then,

education and preparedness measures have been largely replaced by fire evacuation and active shooter drills. This study endeavored to understand the likely actions that members of the public may take in the event of a nuclear detonation in the 21st century.

Method: Scenarios for 5 kiloton and 100 kiloton near-surface nuclear detonations were modeled using the Hazard Prediction Assessment and Capability (HPAC) software. A video was created animating the models with a voiceover that explained the initial effects of a nuclear detonation. Using the Qualtrics platform, a survey was created in which the order of behavior-based questions and the video was randomized. Lucid distributed the survey to a representative sample of the American public.

Results: Among 3,087 participants, only 921 (30%) indicated their confidence in knowing what to do in the event of a nuclear detonation in their city. Participants were most likely to listen to the radio, hide in an interior room, and seal windows or doors. Two thirds indicated they would “duck and cover” (n = 2034, 66%), an action that ranked below helping others (n = 2183, 71%) and wearing a mask (n = 2174, 70%). Study participants who indicated their likely behaviors after watching the video were significantly more likely to listen to the radio (p = 0.044) than those who answered such questions before watching the video.

Conclusion: The results of this study suggest there remains a need for emergency preparedness education for members of the public in the United States. As the threat of a nuclear detonation grows, educational methods such as video explanations may increase the preparedness of the American public.

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The Usefulness of a Digital Whiteboard for Communication During Disasters

Megumi Iwasaki EMT, Tomohisa Shoko MD, PhD, Mayu Ogawa EMT, Tensei Suzuki MD, Yuri Asakura MD, Yuzuru Mochida MD, Shu Tanizawa MD, Keiichi Kuriyama MD, Raira Nakamoto MD, Mitsuaki Kojima MD, PhD
Tokyo Women's Medical University, Adachi Medical Center, Adachi, Japan

Introduction: Information sharing during disasters tends to be confusing. We started the trial operation of a digital whiteboard (DWB) as a communication tool during disasters in 2019 and fully introduced it in 2022. The DWB is a large tablet that allows interactive communication in close to real-time in remote locations through Wi-Fi.

Method: To verify the usefulness of the system, DWBs were placed at triage posts in severely, moderately, and mildly damaged areas during a 2022 disaster drill responding to mass casualties to facilitate the sharing of patient information between Disaster Response Headquarters and each treatment area. In each treatment area, doctors, nurses and paramedics completed a standard form to share information about each patient. Information collected included the triage tag number, patient name, age, gender, type of injury or disease, and description of the treatment.

Results: Six DWBs were remotely shared, with the triage post noting the number of patients passing through each severity



level, and each treatment area noting the treatment status of each patient. The Disaster Response Headquarters replied with the results of adjustments such as hospitalization ward and time to start surgery. The descriptions were reflected in the remotely shared DWBs in about one second. Text conversations through the DWBs were also seen. In the post-event survey, some said that the smooth sharing of information led to quick decisions. Compared to conventional radios, DWBs have the advantage of allowing communication through text, which allows more detailed and accurate patient information to be communicated quickly. The results suggest the survival rate can be improved by assisting early medical intervention or rapid entry of patients into operating rooms. The next goal is to use DWBs for medical coordination among disaster base hospitals.

Conclusion: DWBs are effective for the rapid and accurate sharing of patient information during disasters.

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Adolescents Exposed to Cumulative Natural Disasters: A Comparison Between their Realities in Rural and Urban Areas

Eve Pouliot PhD¹, Danielle Maltais PhD¹, Christine Gervais PhD², Kristel Tardif-Grenier PhD², Ann-Sophie Simard¹, Pascal Gauthier¹, Olivia Maltais-Dufour¹, Ariane Hamel²

1. UQAC, Chicoutimi, Canada
2. UQO, Gatineau, Canada

Introduction: Over the past years, the Outaouais region (Quebec, Canada) and their residents have had to endure no less than five natural disasters (floods, tornadoes). These disasters are likely to have a variety of consequences on the physical and mental health of adolescents, as well as on their personal, family, school and social lives. The experiences of teenagers are also likely to vary depending on whether they live in rural or urban areas.

Method: Data were collected via a self-administered questionnaire in February 2022. A total of 1307 teenagers from two high schools participated in the study by completing an online survey. The questionnaire measured various aspects of the youth's mental health using validated tests, such as manifestations of post-traumatic stress, anxiety and depression, as well as the presence of suicidal thoughts and self-harm. Other aspects of the youth's experience were measured, including their level of social support, school engagement, alcohol and drug use, and coping strategies.

Results: One third of young students (n=1307) were experiencing depressive symptoms and suicidal thoughts, as well as significant daily stress. More than 25% of the students had moderate or severe anxiety and thoughts of self-harm. These problems were significantly more prevalent among youths with prior exposure to a natural disaster. The study data also revealed that youths living in rural areas had a more worrying profile than those living in urban areas.

Conclusion: Similar to other studies (Ran et al., 2015; Stratta et al., 2014), our research data revealed that youths living in rural areas presented a more concerning profile than those residing in urban areas. It therefore seems important, in future

studies and services, to focus more specifically on these teenagers to better understand their needs and to develop adapted services more likely to meet them.

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Significance of the “Coordination Headquarters for Healthcare and Medical Support” in Japan; comparison with Emergency Medical Team Coordination Cell (EMTCC)

Tomoki Nakamori MD, PhD¹, Yoshiki Toyokuni², Hisayoshi Kondo MD, PhD², Tatsuhiko Kubo MD, PhD³, Yuichi Koido MD, PhD²

1. Yokohama Rosai Hospital, Yokohama, Japan
2. National Hospital Organization Disaster Medical Center, Tachikawa, Japan
3. Hiroshima University, Hiroshima, Japan

Introduction: The Japan Disaster Medical Assistance Team (DMAT) was established in 2005. Although it had become possible to gather medical teams at an early stage in the fields of health and welfare, there had still been a lack of personnel. In 2017, the Japanese government decided to establish the Health and Medical Coordination Headquarters when we had major disasters. Not only the medical team, but also the public health nurse and the welfare team gathered at this headquarters, and activities that integrated health, medical care, and welfare started from an early stage. On the other hand, WHO indicates to establish EMTCC within the Ministry of Health, in order to manage and coordinate EMT activities and aggregate data.

Method: The Japanese Headquarters and the EMTCC were compared in terms of their functions and issues.

Results: In Japanese headquarters, the director of the local public health center will be the director, and the secretariat for the headquarters will be run by supporters. Participants in the headquarters meeting include leaders of public institutions involved in health risk management. Furthermore, leaders of unions such as medical, dentist, pharmacists and nurses on the side of supporters, leaders of medical, healthcare, and welfare will participate. To establish EMTCC, WHO dispatches a coordinator, information manager, and data analyst.

EMTCC collects medical information by using Minimum Data Set (MDS), which is similar to Japanese Surveillance in post extreme emergencies and disasters (J-SPEED). The most significant difference is that EMTCC does not deal with health and welfare issues.

Conclusion: Regarding medical care, information is summarized in a similar way at headquarters. These facts indicate the Japanese headquarters management experience is applicable to EMTCC.

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Mass Casualty Triage: What Works and Who Does it Best?

Jessica Walsh O'Sullivan MD, MS¹, Esther Hwang DO, MPH¹, Benjamin Mize NRP², Erik Glassman MS, NRP³

1. Emory University, Atlanta, USA
2. Grady Emergency Medical Services, Atlanta, USA
3. US Department of State, Washington, USA