


COMMENTARY

Evacuation of residents in a natural disaster during the COVID-19 era

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At 11:07 p.m. on 13 February 2021, an earthquake with a magnitude of 7.3 struck Fukushima, Japan, which was considered to be an aftershock of the Great East Japan Earthquake (GEJE) that occurred in March 2011.¹ A tsunami of up to 20 cm was observed as result of this earthquake. In addition to the damage to numerous houses, expressways and railroads, mainly in Miyagi and Fukushima prefectures, as of 15 February, 152 residents were injured; fortunately, there were no fatalities and the damage was limited.

This was the first major earthquake since the outbreak of the novel coronavirus disease (COVID-19) in Wuhan, China, in December 2019 and the SARS-CoV-2 outbreak in Japan. Evacuation shelters were opened to affected residents in the hardest-hit municipalities. In Soma City, a northern coastal municipality in Fukushima Prefecture, where the Japanese seismic intensity scale was 6 upper in this quake, 2 evacuation shelters were opened 40 min after the earthquake hit and 87 people, including many elderly, had evacuated by 2:30 a.m. To prevent the spread of COVID-19, in addition to hand disinfection and body temperature checks, two buildings on the same site were prepared for the zoning of people with fever. In the

gymnasium, which served as the evacuation shelter, tents with open roofs were set up at intervals of approximately two meters and contained a single household (Figure 1). There was a swift and adequate response, possibly because the damage was limited and the earthquake hit the municipality that had experienced the GEJE and the Fukushima Daiichi Nuclear Power Plant (FDNPP) accident. In contrast, this event highlighted the importance of preparing for the evacuation of residents in the COVID-19 era.

The importance of controlling communicable diseases during natural disasters was recognized even before the COVID-19 pandemic.^{2,3} For example, in Japan, hospital admission rates and estimated morbidity of pneumonia had significantly increased immediately after the Great Hanshin-Awaji Earthquake in 1995.⁴ It has been suggested that influenza virus, norovirus and tuberculosis infections may have occurred in evacuation shelters after the GEJE.^{5,6} In light of these cases, the need to train experts in infectious disease control during disaster evacuation was suggested even before the COVID-19 pandemic in Japan, one of the most disaster-prone areas worldwide.²

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Figure 1. Roof-free tents for ventilation, which can be ventilated for infection measure, were set up for evacuees in a gymnasium in Soma City 40 min after an earthquake on 13 February 2021. This photograph was taken by Naomi Ito, an author of this commentary, on 16 February 2021.

The evacuation response to natural disasters during the COVID-19 pandemic requires more attention. For example, evacuations associated with hurricanes in the COVID-19 pandemic may accelerate the spread of infection, emphasizing the need to carefully consider the destination of residents' evacuation.⁷ Recent reports also suggested that disasters may exacerbate infections, especially among the poor.⁸ Considering the importance of countermeasures against infectious diseases during past disasters, organizations such as the World Health Organization, the Cabinet Office, Government in Japan and the Japan Medical Association issued strategies for evacuation shelter use under the COVID-19 pandemic, calling for the attention of the public and municipalities.⁹ The strategy recommends opening as many evacuation shelters as possible, including hotels and public facilities, limiting the number of people in each evacuation shelter and dispersing evacuation. In public facilities (e.g. school gymnasiums), it is also recommended to consider social distance by using one area for a family and allowing more space between areas. Particularly in areas with the ongoing COVID-19 pandemic, it is crucial to respond to residents who have contracted COVID-19 and who are receiving home treatment.

Notably, evacuation among the vulnerable, such as the elderly and the disabled, requires special attention. At this time, such vulnerable populations are likely to be affected more if the scale of the disaster is larger. Even vulnerable residents who should evacuate should not be deterred from doing so for fear of being infected with COVID-19. From the experience of the

FDNPP accident, the evacuation of the vulnerable may pose a heavier physical and mental burden.¹⁰ A major challenge is that these vulnerable populations are also highly vulnerable to COVID-19. Thus, significant care must be taken to ensure that infection control and minimizing the health impacts of evacuation on them can be implemented safely at the same time. During the COVID-19 pandemic, protecting the health of vulnerable populations requires further consideration.

Conflict of interest: None declared.

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