The decision to evacuate or shelter-in-place is fundamental to emergency response, especially for a vulnerable population. While an elevated risk of mortality due to a hasty, unplanned evacuation has been well documented, there is little research on and knowledge about the health consequences of sheltering-in-place in disaster contexts.

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Shimada et al., from the Department of Neurosurgery, Minamisoma Municipal General Hospital, Minamisoma, Japan. compared hospital mortality in patients who sheltered-in-place (non-evacuees) after the incident with the baseline preincident mortality and articulated postincident circumstances of the hospital while sheltering-in-place.

They considered all 484 patients admitted to Takano Hospital (located 22 km South of the Fukushima Daiichi nuclear power plant) from 1 January 2008 to 31 December 2016.

Significant differences in mortality rates between preincident baseline and three postincident groups (evacuees, non-evacuees (our major interest) and new admittees) were tested using the Bayesian survival analysis with Weibull multivariate regression and survival probability using the Kaplan-Meier product limit method. All the analyses were separately performed by the internal and psychiatry department.

After adjusting for covariates, non-evacuees in the internal department had a significantly higher mortality risk with an HR of 1.57 (95% credible intervals 1.11 to 2.18) than the baseline preincident. Of them, most deaths occurred within the first 100 days of the incident. No significant increase in mortality risk was identified in evacuees and new admittees postincident in the department, which were adjusted for covariates. In contrast, for the psychiatry department, statistical difference in mortality risk was not identified in any groups.

The mortality risk of sheltering-in-place in a harsh environment might be comparable to those in an unplanned evacuation. If sheltering-in-place with sufficient resources is not guaranteed, evacuation could be a reasonable option, which might save more lives of vulnerable people if performed in a well-planned manner with satisfactory arrangements for appropriate transportation and places to safely evacuate ¹.

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Shimada Y, Nomura S, Ozaki A, Higuchi A, Hori A, Sonoda Y, Yamamoto K, Yoshida I, Tsubokura M. Balancing the risk of the evacuation and sheltering-in-place options: a survival study following Japan's 2011 Fukushima nuclear incident. BMJ Open. 2018 Jul 28;8(7):e021482. doi: 10.1136/bmjopen-2018-021482. PubMed PMID: 30056383.

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