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Construction of simulation systems for large-scale disasters

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Statement of the Problem: The risk of the occurrence of a large-scale earthquake in Japan in the near future is increasing. The estimated damage of an M 7.3 earthquake with Tokyo Bay as the epicenter at 6 p.m. in the winter (wind speed 8 m) in Ota Ward, Tokyo, alone is predicted to be 11,108 destroyed buildings, 32,218 burn injuries, 1,073 fatalities and 10,412 injured and 1,655 critically injured patients.

Methodology & Theoretical Orientation: In this study, we developed a system that simulates the number of critically injured people likely to be hospitalized in the five disaster base hospitals in Ota Ward during a large earthquake and examined its usability. The system is based on specialized software with map functions and it has the following four features; Based on the database published by the Tokyo Metropolitan Government, the map color codes the comprehensive degree of risk; The number of critically injured who are likely to be hospitalized in the five disaster base hospitals are estimated and indicated on the map; Simulations are developed for 5 a.m., 12 p.m., and 6 p.m.; Simulations are developed for 24, 48 and 72 hours after the occurrence of the disaster.

Finding: Our estimates demonstrated that the number of critically injured patients hospitalized at the disaster base hospitals during an earthquake could be as much as 20 times the usual levels.

Conclusion & Significance: Based on the interviews of hospital officials, we confirmed that this simulation system could be helpful in responding to large-scale earthquakes.

Biography

Ruriko Nakahara has completed her PhD at Tsukuba University. She is a Professor in the Faculty of Nursing at Kyoritsu Women's University.

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