

Chapter 40

Comprehensive Community Care and Disasters

Field of expertise: Disaster Stomatology

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Summary

An analysis of citizen's situations before the disaster and deaths caused by the tsunami showed that fewer people who were less independent and were considered to be high-risk died on the day of the disaster. On the other hand, more people who lived with their families or had many friends died. The risk of death was found to be 3.9 times higher for those who were severely depressed. These results show the importance of *Tsunami tendenko*, the legend that each person flees in isolation to save their own life, but it also suggests what is needed to ensure that vulnerable people are never left behind in disasters. We believe that the community-based comprehensive care system, which the national government is developing in cooperation with regional medical care and long-term care, will also play a major role in regional disaster mitigation.

Keywords: community comprehensive care system, Iwanuma Project, community disaster mitigation, multidisciplinary cooperation

1: Problems Revealed by the Great East Japan Earthquake

The Iwanuma Project: Examining the health and lives of the elderly before and after the earthquake

For more than 10 years, we have been working with Iwanuma City, Miyagi Prefecture, (population: approximately 44,000) to develop a nursing-care prevention program¹ for the elderly, which has been covered by various media and has become a model for the national government. In 2010, the year before the Great East Japan Earthquake, we were able to conduct a Life and Health Survey of all elderly people together with Iwanuma City Hall. This was possible because Iwanuma City agreed to participate in the Japan Agency for Gerontological Evaluation and Research project, in which we also participate. This project investigates the lives and health of elderly people in the community, and examines how social capital and social environments affect their health. Thirty cities, towns, and villages nationwide participate in the project, which is

¹ A program that supports maintenance and improved living conditions of elder people in order to prevent them, as best as possible, from deteriorating health and falling into a long-term care-requiring state.

conducted every three years, and many researchers from universities and other institutions participate in the project.

In Iwanuma City, the Great East Japan Earthquake left 187 people dead or missing, 5,428 houses completely, half, or partially destroyed, and 48% of the city area flooded, causing damage to a lot of farmland and 200 companies in the industrial park. We conducted a survey in 2013, 2016, and 2019 in addition to the pre-earthquake data (2010 survey). By combining these data, we were able to construct a data set that can capture the changes from the pre- to post-earthquake situation on a yearly basis. This valuable data was funded by the U.S. National Institutes of Health (NIH) through the efforts of Professor Ichiro Kawachi of Harvard University, with whom we had been collaborating for some time. Together, we launched the Iwanuma Project.

The findings of this project are as follows.

Group housing is good in evacuation sites

In many municipalities, moving into temporary housing, of which there are only a limited number, was done randomly by lottery or other means in order to maintain fairness (randomized move-ins). Based on the experience of the Great Hanshin-Awaji Earthquake, Iwanuma City implemented a method of moving into temporary housing while maintaining the community by neighborhood associations (group move-ins). A study of the impact of this method revealed that those who moved into group housing were 2.5 times more likely than those who moved into random housing to maintain relationships and to be in good mental health.

The impact of disasters on the mental and physical health of disaster victims is significant.

As for the relationship between the onset of depression after the earthquake and residential relocation, the risk of developing post-disaster depression was twice as high among those who moved to temporary housing compared to those who did not move. Losing jobs, and not being able to receive mental health support immediately after the disaster were associated with worsening symptoms of depression, in addition to the loss of a home. Two years after the earthquake, there was still an effect, and the effect of having one's home completely destroyed was more pronounced in males. The inability to see a psychiatrist immediately after the disaster also had an impact, but various measures were taken, including the opening of a mental health care center. In the immediate aftermath of the disaster, while everyone is working hard, declining mental health may go unnoticed, and it is important to provide mental health care even to those who may appear to be okay.

Post-traumatic stress disorder (PTSD) is known to be caused by traumatic experiences that threaten someone's safety, such as war, natural disasters, and accidents. A study of PTSD among survivors found that while loss of relatives or friends and damage to houses increased the chances of PTSD, social bonds among individuals and local communities prior to the disaster suppressed PTSD.

Among the elderly, the study found that dementia worsened as a result of the earthquake. Those whose homes were completely destroyed reported higher levels of dementia (worse cognitive functioning) than those whose homes were not damaged. In our study, we found that those who had weakened social ties after the earthquake showed a worsening of dementia due to housing damage, while those who had improved social ties after the earthquake showed a mitigation of the impact of housing damage on dementia.

The loss of a home, a job, and the inability to see a physician immediately after the disaster were all associated with a reduction of independence in the lives of the elderly about 2.5 years

after the disaster. The inability to see a doctor is thought to have worsened chronic illnesses due to the disruption of medication, the loss of human connections, and the decreased frequency of going outside due to the absence of outpatient visits.

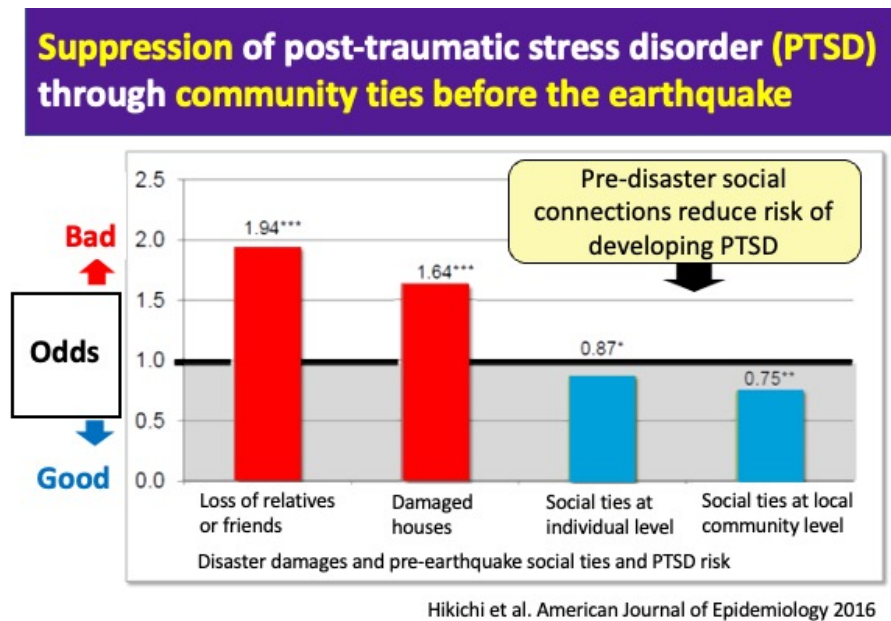


Figure 40-1. Community ties before the earthquake suppressing the onset of Post Traumatic Stress Disorder (PTSD)

2: Paradigms Destroyed by the Earthquake

In the Great East Japan Earthquake, although there was about one hour between the earthquake and the arrival of the tsunami, many people were killed by the tsunami. We investigated the relationship between the deaths caused by the tsunami and the characteristics of the elderly people living in the area before the earthquake. We found that those who were severely depressed before the disaster had a higher mortality rate of 12.8% and a significantly higher risk of death of 3.9 times. On the other hand, surprisingly, those who had less independence in daily life and were considered to be at higher risk of death from the tsunami were less likely to die on the day of the disaster. In Iwanuma City, it is reported that on the day of the earthquake, there was a bridge that was not destroyed due to earthquake countermeasures that were in place, and evacuating residents of an elderly residence was successful. An unexpected finding was that the risk of death on the day of the earthquake tended to be twice as high for sociable people who often met with others, compared to those who did not meet with friends often. This means that the more sociable people were, the more likely they were to not leave others alone, going to help them, and unfortunately becoming victims of the tsunami. For those who needed support in the community, such as those who needed nursing care, various measures were taken in places with close community relations, which enabled a quick evacuation. On the other hand, those who were severely depressed were not necessarily recognized by the people around them, making them high-risk people who would delay evacuation. In the Sanriku region, *tsunami tendenko* has been passed down from generation to generation, a tradition in which each person flees in isolation to save their own life. However, for vulnerable people who cannot evacuate on their own, many lives can be saved by putting measures in place in advance, such as considering a disaster response in care plans.

Mortality risk on the day of the earthquake and thereafter

		Risk of death on day of the earthquake	Mortality risk from day after earthquake and onward
Distance from shoreline	≥ distance	1	1
	1000-1999 m	3.01 (0.56, 16.16)	0.83 (0.42, 1.65)
	500-999 m	16.88 (4.33, 65.84)	0.76 (0.38, 1.51)
	0-499 m	22.66 (5.78, 88.84)	0.84 (0.43, 1.68)
Family composition	Living alone	1	1
	Living with someone (not parents)	3.04 (0.47, 19.74)	1.05 (0.54, 2.06)
	Living with parents	6.67 (0.83, 53.71)	0.45 (0.10, 2.12)
Socializing with friends	Don't meet	1	1
	Meet	2.06 (0.51, 8.23)	0.46 (0.26, 0.82)
Depression	None	1	1
	Mild	0.79 (0.29, 2.19)	1.39 (0.81, 2.38)
	Moderate	1.14 (0.29, 4.50)	1.45 (0.65, 3.26)
	Severe	3.90 (1.13, 13.47)	1.91 (0.81, 4.50)
Independence in daily life	Independent	1	1
	Partial nursing care required	0.73 (0.18, 2.89)	2.44 (1.30, 4.56)
	Nursing care required	0.32 (0.04, 2.64)	2.97 (1.43, 6.14)

※年齢性別居住形態生活習慣などを調整済み
 ※当日はロジスティクス回帰分析、翌日以降はCoxの比例ハザード分析を用いる

Aida J, Hikichi H, Matsuyama Y, Sato Y, Tsuboya T, Tobuchi T, Kayama S, Subramanian SV, Abodo K, Okata K, Kawachi I. Risk of mortality during and after the 2011 Great East Japan Earthquake and Tsunami among older coastal residents. *Scientific Reports* 2017;7(1):16591.

Figure 40-2. Risk of mortality during and after the 2011 Great East Japan Earthquake and Tsunami among older coastal residents

3: A New Approach

Disaster response utilizing the comprehensive community care system

We think that the community-based comprehensive care system being promoted by the government would be useful in a disaster response. Community-based comprehensive care is a concept in which medical care, nursing care, prevention, housing, and lifestyle support are comprehensively secured so that people can continue to live independently according to their abilities in the communities familiar to them for as long as possible, even if they need medical care or nursing care.

4: Achievements and the Future

A nationwide survey was conducted targeting the Regional Comprehensive Support Center and municipalities, which play a central role in this comprehensive community care system. Although few local governments have established a comprehensive community care system as a disaster countermeasure, the number of municipalities and neighborhood associations working on voluntary disaster prevention in the region is gradually increasing. They are not waiting for assistance from the outside, but rather, they are communities that do what they can on their own under the leadership of good government and neighborhood associations. In the future, however, local resources related to home healthcare, such as home care support clinics, home nursing stations, nursing care offices, and home delivery pharmacies, will be very important for emergency responses in the event of a disaster. It is necessary to have a system that is organically related to disaster response. In addition to securing power supplies for people using home oxygen and ventilators in their individual care plans, it is necessary for community disaster prevention to envision existing nursing and welfare facilities as emergency evacuation sites and to consider

disaster response in community care meetings. In addition, it is not enough for individual companies and medical institutions to create business continuity plans (BCP), but the entire community must think about it, because if, for example, a nursery school or nursing home closes, it will affect many people of working age. While this type of movement seems to be emerging in the industrial sector, community continuity management (CCM) is needed to sustain an entire region. In order to achieve this, it is necessary to have a mixture of initiatives in the community, that include governments and business, children to the elderly, and that see elderly people and people with disabilities in need of care as valuable community resources.

Conclusion - from the authors

By putting ideas such as mixed disaster responses in which a diverse group of people are involved in responding to a variety of disasters in various ways, including the COVID-19 pandemic, we hope that communities will become more resilient, and that no one will be left behind.

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