

Resilience in the face of disaster: Reflections on the Japanese earthquake and tsunami

Mitsuyoshi Mita
6th Year Medical Student
Jikei University School of Medicine
Tokyo, Japan

Mitsuyoshi Mita is a sixth year medical student at the Jikei University School of Medicine in Tokyo, Japan. He is interested in cardiology and physiology, and aspires to become a clinician as well as a basic researcher. He is also interested in the world's social conditions, urban planning and urban problems. He is a member of a soft tennis (Japanese-style tennis) club at the university. Skiing and snowboarding are also his favourite sports.

This year I had the worst experience of my life. It happened at 2:46 pm on March 11th, and shocked all Japanese people including myself. This disaster was especially shocking to me as my hometown was near the disaster areas. In this article I'm going to write about Japan's earthquake and tsunami disaster and how it has impacted me.

The disaster was caused by a magnitude 9.0 earthquake; the seismic centre under the Pacific Ocean, about 130 kilometres from Miyagi prefecture (Figure 1).

The direct damage caused by the earthquake was minimal because the Japanese Government had taken many preventive measures against earthquakes. Both Japan and New Zealand sit on the Pacific Ring of Fire, in a zone of extreme crustal instability, so preventative measures are essential. In Japan these measures include constructing buildings to strict earthquake resistant codes and earthquake-preparedness education for all residents.

Despite these preventative measures, the earthquake created unanticipated mega-tsunamis and they engulfed many Pacific seaside cities especially in the Tohoku area. The tsunami climbed a record of 40.5 metres above sea



Figure 2. Rikuzentakata City. The seashore area is littered with debris.

level (in Miyako City) and many cities were severely damaged. As a result 15,628 people died, 4,823 people are missing (as of July 25th), and many more displaced.

Unfortunately the misfortune was not over. The tsunami also hit the Fukushima Daiichi Nuclear Power Station and washed away almost all of the buildings for generating the emergency power supply. Three of the six nuclear reactors and at least one spent fuel pool were unable to cool down due to station blackout (loss of off-site AC power), which resulted in a full melt down. The area within a 20 kilometre radius from the nuclear power station became an evacuation zone, and the area 20 to 30 kilometres from the station became a voluntary evacuation zone.

People in Tokyo also suffered from the disaster although there was little damage or injury. Immediately after the earthquake, all of the trains and buses were temporarily out of service and many people working in central Tokyo had travel back to their suburbs by foot. Highways were closed and there were many severe traffic jams in Tokyo. Airports were closed and many travellers were stranded and unable to leave the country. Drivers rushed to the gas stations to fill their cars up, and many residents stripped supermarket shelves bare to stock up on essentials such as water and tinned food. There was widespread panic over food and petrol shortages. 'Chaos' was the best word to describe Tokyo at that time.

When the quake began I was on the sixth floor of my university in Tokyo, taking part in our graduation ceremony (in Japan our academic year begins in April). At the beginning of the earthquake I felt dizzy and I didn't notice it because of the vertical shake. As the shaking became horizontal, I soon realised that it was a big earthquake. It was too hard to stand still during the shake. When I looked outside the window, I saw that part of an old building's wall had collapsed and thought that this earthquake was not normal. I turned on the television on my cellphone and was shocked to hear



Fig. 1 Map of eastern Japan. The Tohoku region is shaded. The Pacific coastal areas of Miyagi, Iwate, and Fukushima prefectures were devastated by the tsunami.

news about the earthquake near Miyagi prefecture and the large tsunami warning issued to all Pacific seaside areas. After I heard the news I began to worry about my family living in my hometown (Morioka city) because my hometown's prefecture (Iwate prefecture) is next to Miyagi prefecture. Luckily Morioka city is far from the coast and no tsunami damage occurred there. After going back home from the university by taxi, I found my family, my parent's house and my house in Tokyo were fine. It was a very long day for me.

Tokyo is now recovering gradually, but many problems still exist. Public transportation is in service again and citizens have already started working. Stores and offices are open now, but rolling blackouts across the city are about to begin again. Building owners are encouraged to save electricity and Tokyo is now a little darker, especially at night. Residents across the city are also advised to save electricity as many of the nuclear power stations have stopped for inspection and power shortages may occur especially in summer. It is important to note that nuclear panic is not happening so much in Tokyo, as the city is about 230 kilometres from Fukushima and there is low risk of radiation exposure. However the problem is that the nuclear crisis is impacting on the country's productivity. Many companies such as Sony and Toyota have had to halt their production lines. There is concern that this crisis will impact on Japan's export sector and thus worsen the Japanese economy.

People in disaster areas are suffering even now. Many of the 91,552 refugees still live in shelters erected soon after the tsunami. Some of the refugees have health problems on account of the long periods they have spent in cramped living conditions. One example is deep vein thrombosis, caused by living in cars for a long period. Infections are not a common aftermath in Japan's disasters, but this time the number of influenza patients is rapidly increasing in some disaster areas. A scarcity of drugs is a big problem for refugees who have severe hypertension or insulin-dependent diabetes mellitus. Medical teams from other prefectures and foreign countries have come to disaster areas in rotation to address the health problems. Temporary housing is being constructed now and debris removal in disaster areas has just started. Reconstruction of Tohoku will be a long way away.

In March 30th 2011, I had the opportunity to visit Rikuzentakata city, a tsunami-hit area, to participate in post-mortem examinations with my father. In Japanese law, death certificates must be written by medical doctors. As

my father has a medical licence and works at the medical university near the disaster areas, he was ordered to participate in post-mortem examinations by the police. I was able to get permission to accompany my father and assist him during the examinations. The examination was an unforgettable experience for me although we only identified five bodies. The bodies were quite different from the bodies I dissected during anatomy and pathology classes. As many of the bodies had been submerged in water they had swollen systemically and the skin turned red, blue or green with adipocere. Many parts of the bodies had been eaten by fish or injured by rocks or other debris, so the muscles and bones were exposed. None of the bodies had any eyes. All of these are typical appearances of drowned bodies. I thought it was hard to identify each body because I couldn't even identify whether each face was male or female, or whether she/he is young or old!

On the day of the examination I walked down to the seashore and could see the horrible view of the city (Figure 2). There were piles of debris and some broken cars and ships were still floating or submerged in the water. The city was completely devastated and appeared like a war-zone. When I walked along Route 45, I found one road sign which said, "End of Estimated Tsunami Inundation Area" (Figure 3). This sign represented the estimated limit of a tsunami and the beginning of a safety zone determined by the government. Interestingly the government didn't predict that a tsunami would engulf beyond the sign. In fact the tsunami did engulf the area beyond the sign. Humans can never win against nature I thought.

Through many experiences I had after the earthquake, I thought how peace is of great importance. 'Tsunami' is a word of Japanese origin. Historically Japan has endured many kinds of disasters, such as earthquakes, tsunamis, eruptions and typhoons. However even the Japanese people, who should have been the most prepared for any disaster experience, couldn't anticipate and prepare for this disaster. I would like everyone to know and not to forget the danger of earthquakes and tsunamis. The geography of New Zealand is so similar to Japan that people in New Zealand must think about it as well. The Japanese people greatly thank New Zealanders for saving the lives of Japanese students in Christchurch earlier this year and appreciate the numerous donations for this earthquake. Reconstruction is going to take time, but we Japanese will never give up.



Figure 3. This road sign states that tsunami would never go beyond this point.