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AGEING SOCIETY, HEALTH ISSUES AND DISASTER

Assessing 3/11

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Introduction

The Tōhoku Earthquake and tsunami were devastating overall, but disproportionately affected the elderly, raising awareness about emergency disaster public health issues in an ageing society. This chapter assesses the consequences of 3/11, and draws comparisons with the 1995 Great Hanshin Earthquake, in terms of Japan's ageing society and health issues. I also consider long-term challenges in terms of mental health and psycho-social support.

The 2011 Tōhoku Earthquake and tsunami

The overwhelming destruction of the 1995 Kobe Earthquake was often compared with the heavy bombing towards the end of World War II especially among older people in the affected areas (Ōtani 2010). Few people were expecting that an even more devastating cataclysm would hit Tōhoku in 2011 on a scale again reminding us of wartime devastation.

The 3/11 Tōhoku Earthquake and tsunami is often said to be the worst catastrophic disaster Japan has experienced since World War II (Nagamatsu *et al.* 2011). Learning lessons from the 1995 Kobe Earthquake, the government organized and deployed approximately 700 medical teams specialized in disaster management within the first 72 hours, a critical window for rescuing survivors. The Internet, which was not common in Japan in 1995, facilitated communication among clinicians and enabled them to promptly identify the needs of the affected hospitals and deliver necessary supplies to the extent possible given extensive damage to the transport infrastructure. Medical professional societies took the initiative in the logistics of transferring victims away from the disaster zone.

TABLE 14.1 Medical professionals dispatched by Ministry of Health, Labour and Welfare

	<i>Currently working as of August 5, 2011</i>	<i>Accumulated number (AN) as of August 6, 2011</i>
Medical team	42 staff (10 teams)	AN: 11,806 staff (2,493 teams) Iwate: 8 staff, 2 teams Miyagi: 30 staff, 7 teams Fukushima: 4 staff, 1 team
Pharmacists	0	AN: 1,915 staff
Nurses	0	AN: 1,394 staff Fukushima: 5 persons
Dentists	0	AN: 307 staff
Physical therapists	10 staff	Accumulated number 146 staff Iwate: 6 staff Miyagi: 4 staff
Public health physicians, public health nurses, Nutritionists	145 staff (56 teams)	AN: 9,472 staff Iwate: 45 staff, 16 teams Miyagi: 73 staff, 29 teams Fukushima: 27 staff, 11 teams
Kokoro-no-Care team (mental health and psycho-social support)	27 staff (9 teams)	AN: 2,931 staff (204 teams) Iwate: 21 staff, 6 teams Miyagi: 6 staff, 3 teams Fukushima: 0 staff, 0 teams
Radiation physicians for screening to ease anxieties about radiation exposure	2 staff (1 team)	AN: 413 staff (38 teams) Fukushima: 2 staff (1 team)
MHLW officials	125 staff	AN: 2,960 staff Iwate: 26 staff Miyagi: 65 staff Fukushima: 34 staff

Source: Ministry of Health, Labour and Welfare homepage at: www.mhlw.go.jp/jishin/joukyoutaiou.html [accessed August 6, 2011].

As a result of the 2011 Tōhoku Earthquake and tsunami, 80 percent (300) of the 380 hospitals in Iwate, Miyagi and Fukushima prefectures were completely or partially damaged and destroyed (11 were completely destroyed and 289 partially) (*Yomiuri Shimbun* June 9, 2011). Half of the hospitals reported troubles in coping with the volume of out-patients after 3/11. Two months after the earthquake, 10 percent of the hospitals reported that they had not yet resumed normal operations.

Without in any way diminishing the suffering of people in the devastated areas of Tōhoku, it is fair to say that all Japanese suffered from a certain degree of post-3/11 depression. The media reported the traumatic stories non-stop in the days and weeks following March 11. It is indicative that the national suicide rate for May 2011 rose 20 percent from the same month in 2010 (McCurry 2011). The Japanese government announced that 16 people committed suicide in June 2011

due to the disasters out of a total 2,985 suicides nationwide. Out of 45 suicides in Miyagi, eight cases were identified as earthquake-related cases, three out of 36 in Iwate, and two out of 50 in Fukushima. Other cases were identified in other prefectures such as Ibaragi, Saitama and Tokyo. Of the disaster-related suicides eight out of 16 involved people who lost their homes and work places, two were living in evacuation centers and one in a temporary shelter. Out of the 16, 11 were male and five were female and eight were over age 60, five were in their 50s, two in their 20s, and one was younger than age 20 (*Nikkei Shinbun* August 6, 2011; *Yomiuri Shinbun* August 6, 2011). It is still too early to make a conclusive analysis based on this data, but the elderly did account for one-half of disaster-related suicides in June 2011.

The country was swept by gloom fed by relentless reporting of post-3/11 personal tragedies and hardship. Japanese everywhere knew that they too might someday suffer the same fate as the people in Tōhoku, living as they do in one of the most disaster-prone countries in the world. So when the underdog Japanese women's team won the FIFA Football World Cup in July 2011, overcoming what seemed insurmountable odds, the nation was overjoyed, a rare piece of uplifting news. The gritty determination of the team and their teamwork seemed to epitomize Japanese strengths and encouraged survivors struggling to overcome unprecedented adversity.

The 1995 Kobe Earthquake hit mainly urban areas of metropolitan Kobe-Osaka, but subsequently affected newly developing suburban areas outside Kobe with the building of temporary shelters and relocation of permanent housing and communities. In comparison, the 2011 Tōhoku Earthquake hit more remote, rural areas away from big cities, along five hundred kilometers of coastline. This means that evacuation points were scattered over mountainous areas adjacent to the Sanriku Coast, rendering access and assistance much more difficult than in the aftermath of the Kobe Earthquake where staging areas for rescue and relief operations were relatively intact. This made a huge difference in reaching survivors in a timely way. The 2004 Niigata Earthquake and 2007 Chūetsu Offshore Earthquake in Niigata also affected remote, rural mountainous areas and the differences with the 1995 Kobe Earthquake were similarly marked. But the scale of destruction caused by the massive tsunami was far greater and much more widely dispersed.

One of the major features of 3/11 was that it hit areas with a high level of elderly population. Nearly two-thirds of the recovered bodies were 65 years and older and one-quarter of the victims were in their 70s suggesting that age was a critical factor in survival as less mobile people could not escape in time. Due to regional demographics there was also a high proportion of older people among survivors and evacuees, translating into a high demand for routine medications in evacuation centers when many elderly ran out of medicine. The spectrum of causes of death is distinct between the earthquakes of 1995 and 2011. In Kobe, many victims died from fire-related causes and trauma, including being crushed by buildings and debris, while delays in providing hemodialysis or kidney dialysis contributed to additional deaths. Many of the Kobe survivors had serious injuries while in Tōhoku drowning

caused most deaths and relatively few survivors had serious injuries (Nagamatsu *et al.* 2011). This reflects what happens during a super-tsunami.

The scale of death was also vastly different with about 6,400 deaths in Kobe versus over 20,000 dead and missing in Tōhoku. Regarding the elderly, in Kobe most died because they were sleeping on the ground floor and injured by falling furniture and collapsing walls. On the other hand, during 3/11, many older people survived the earthquake, but were unable to escape the tsunami and drowned while younger, more vigorous people were able to evacuate in time.

Tsunami lung and hypothermia

The Kobe quake provided insights on dealing with crush-related injuries, lessons that were useful for Japanese medical teams responding to the 2008 Sichuan Earthquake in China. In 3/11, there was a high incidence of tsunami lung, a necrotizing pneumonia that was also common among survivors of the Indonesia–Thailand tsunami on Boxing Day, 2004 (Allworth 2005; Chierakul *et al.* 2005; Kongsangdao *et al.* 200; Potera 2005). In addition, many survivors of 3/11 suffered from hypothermia as temperatures remained wintry for several weeks afterward. Some survivors were floating in the cold water for several hours before they got rescued so that their body temperature was very low (27°C), triggering a series of symptoms.

Ageing society

One of the major features of this disaster was that it hit areas with a high level of population ageing (Yamamoto *et al.* 2011). In Iwate, 26.8 percent of the population was 65 years old and over in 2009¹ and this proportion is projected to rise to 37.5 percent by 2035. At the evacuation center served by the Nagasaki University medical relief team, out of 221 evacuees on March 28, 84 (38 percent) were aged 65 years and over.

TABLE 14.2 Demographic composition of the disaster-affected prefectures, as of October 1, 2009

Age range	0~14	15~64	65 and over	
				(of which, 75 and over)
All Japan	13.3	63.9	22.7	(10.8)
Iwate	12.6	60.6	26.8	(13.8)
Miyagi	13.4	64.5	22.1	(11.0)
Fukushima	13.8	61.5	24.7	(13.1)
Tokyo	11.9	67.3	20.9	(6.4)

Source: Statistics Bureau, Ministry of Internal Affairs and Communications: www.stat.go.jp/data/jinsui/2009np/pdf/gaiyou.pdf#page=4 [accessed August 5, 2011].

In Kobe, more than half of those who died were aged over 60 and 60 percent were women (Tanida 1996). All of the most common injuries and earthquake-triggered illnesses were reported disproportionately among people aged over 65.

The proportion aged over 65 for all Japan in 1995 was 19.6 percent, 22.7 percent in 2000 and is projected to reach 36.3 percent by 2025 (Ōtani 2010: 3). People aged over 60 years made up 17.8 percent of the population in Kobe 1995 (Ōtani 2010: 14). The overall proportion of people aged over 65 in temporary shelters in Hyōgo prefecture was 30.3 percent in February 1996, one year after the earthquake (Ōtani 2010: 84). However, in some compounds the proportion reached as high 44.2 percent reflecting priority allocation for the elderly (Ōtani 2010: 84, 90–91).

We do not have data for the proportion of older people in Tōhoku temporary shelters, only five months after the earthquake, as they are still building temporary shelters, behind schedule, and still in the process of allocating units to applicants. Yet the stage varies across the vast disaster-affected areas. Some areas are lagging in meeting shelter targets as it is both difficult to locate suitable land sites and to reach agreement with landowners. The media reports that there is a high proportion of older people in some Tōhoku temporary shelters. For example, in Yamamoto village in Miyagi, 31 percent of temporary shelter residents are aged 65 and over.² It is also reported that a community center built there (Yamamoto) for 50 households is not yet utilized well, but this is not unusual in disaster-stricken areas where it takes some time to resume normal activities.

The Ministry of Health, Labour and Welfare (MHLW) requested elderly nursing care homes in each prefecture to accept those in need of such care from disaster-affected areas. It also requested each prefecture to dispatch nursing care staff to institutions and evacuation centers. Other prefectures indicated that they could dispatch a total of 7,719 staff, but as of August 5, 2011 such dispatched staff totals 1,531.

TABLE 14.3 The number of elderly nursing care-givers dispatched to an elderly home in the disaster-affected prefectures

		<i>Accumulated number (AN)</i>	<i>Staff currently working</i>
Iwate	• Elderly Nursing homes	283	12
	• Disabled homes	19	6
Miyagi	• Elderly Nursing homes	999	3
	• Disabled homes	62	10
	• Consultation support center for the disabled	12	4
Fukushima	• Elderly Nursing homes	104	0
	• Disabled homes	52	31

Source: Ministry of Health, Labour and Welfare homepage, at: www.mhlw.go.jp/jishin/joukyoutaiou.html [accessed August 5, 2011].

MHLW announced that it aims to establish elderly nursing centers in at least 100 temporary shelter compounds (*Yomiuri Shimbun* April 19, 2011). This is to prevent *kodokushi* (dying alone) and older people from becoming bed-ridden. This is an unprecedented initiative to establish elderly nursing care facilities at disaster temporary shelters, a sign that the government is concerned to address age-specific needs of evacuees. The government plans to budget ¥7,000 million (US\$87.5 million) in 2011 to build such facilities in nine prefectures: Aomori, Iwate, Miyagi, Fukushima, Ibaragi, Tochigi, Chiba, Niigata and Nagano. This includes prefectures not affected by the natural disasters where temporary shelters are being built. An additional budget of ¥1,000–1,500 million (US\$12.5–18.75 million) will be allocated to the heavily damaged prefectures of Iwate, Miyagi and Fukushima.

Changing living patterns in rural Japan

By the time of the 1995 Kobe Earthquake, the proportion of older people who lived in two- or three-generations households was declining rapidly, although it was still high (33 percent in 1995 and 21 percent in 2005) compared to other developed countries (Ōtani 2010: 8–10). In contrast, in the 3/11 devastated areas there was a higher proportion of three-generation households, many of them engaged in family businesses such as fisheries and farming. The proportion of nuclear family households is low in Fukushima, 52.3 percent (ranked 39 out of 47 prefectures), compared to 57.9 percent in Japan in 2005. On the other hand, the proportion of the households with someone aged 65 and over is higher in Fukushima, 43.9 percent (ranked 11 out of 47 prefectures), compared to 35.1 percent nationwide (MIAC³).

Post-3/11 many of these multi-generation families now live separately, another traumatizing experience for survivors. The older generation does not want to be a burden for their sons and daughters in this difficult time, helping to explain the erosion of multi-generation family living arrangements. The loss of cross-generational cohabitation and the mutual support this allows is another health risk factor.

The younger and middle-aged generations have moved to other areas searching for jobs and cash income to support their extended families during this crisis. Children who lost their schools, in some cases moved to another town for their

TABLE 14.4 Three-generation households

Ranking (out of 47 prefectures)	Prefecture	Proportion of three-generation households (%)
6	Fukushima	17.78
7	Iwate	17.28
18	Miyagi	13.48
	Japan	8.64

Source: Statistics Bureau, Ministry of Internal Affairs and Communications: www.pref.fukushima.jp/toukei/data/hitome/2010/ken/014.pdf [accessed August 6, 2011].

education. Older people are sometimes left alone in the original house or in the evacuation centers as families scramble to adjust to loss of housing, jobs and income. Following the 1995 Kobe Earthquake, family structure and living arrangements reportedly changed due to the earthquake. Older people were often sent to stay with relatives outside the prefecture or were institutionalized (Ōtani 2010: 86–88). The temporary shelters were too small for a big family to live together, especially under such stressful conditions (Ōtani 2010: 127). Subsequent permanent reconstruction housing offered larger-size dwellings, but not necessarily in desirable locations. As a result, the Kobe Earthquake influenced family living arrangements and a reduction of three-generation households. This new housing was often built in areas remote from the city and it was not convenient for younger and middle-age family members to commute to their jobs. In addition, in many cases younger family members could not afford to house their impoverished parents because they themselves lost everything and they preferred leaving their aged parents in the evacuation center where they could be fed and receive medical services (Ōtani 2010: 89). The middle generation often suffers under the burden of double loans, paying off mortgages on destroyed housing while borrowing more money to restart their lives. This dire financial situation is also evident in Tōhoku where housing and livelihoods were swept away by the tsunami. The *Yomiuri Shimbun* reported in early August 2011 about the case of Mr. Ishii (45) in Fukushima who had to move three times following the tsunami. It calculated the total financial burden of his evacuation (not loss of housing or possessions) including costs of new household furniture, sundries and appliances, transportation, moving expenses, rent, utilities, his reduced salary and loss of wife's part-time income. The total comes to ¥2.49 million or about US\$30,000 to which he adds compensation of ¥2.84 million (US\$35,000) for mental stress. His point is that the ¥1 million (\$12,000) of interim subsidies he has received does not begin to cover actual costs (*Yomiuri Shimbun* August 6, 2011). Apparently, his experience of having to relocate repeatedly is common and makes evacuation unexpectedly expensive.

Vulnerability

Natural disasters tend to highlight the needs of the poorest and most vulnerable groups in society, ones that are usually neglected: orphans, elderly and the disabled (Ōtani 2010: 18). They make visible the previously invisible in the everyday world (Ōtani 2010: 18, 31; Varley 1994). Morrow (1999) sees the vulnerability of victims to disasters as socially constructed. She identified, using Hurricane Andrew as a case study, the poor, the elderly, women-headed households and new migrants as the categories of people at greatest risk during a disaster response (Ōtani 2010: 31).

Post-3/11, the most vulnerable groups are the elderly and children. First of all, the elderly constituted a high proportion of casualties: 65 percent of those who died were over 60 years old and 92 percent of deaths were due to drowning caused by the tsunami. Surviving elderly have reportedly suffered difficult conditions in evacuation

centers where there is little privacy, very basic amenities and few comforts. As in Kobe, elderly medical conditions have deteriorated following the disaster.

Dementia among elderly was reportedly triggered or worsened following the tsunami similar to the experience in Kobe (Ōtani 2010). Sudden disruption of life routines and the horrific experiences traumatized many elderly and contributed to a rise in dementia among them.

Children have also been affected badly as they lost friends, relatives and the reassuring routines of school and play. The lack of normal activity combined with relentless media coverage of destruction they experienced firsthand, has amplified anxieties and lead to metabolic syndrome among evacuees.

Life at evacuation centers

Health care and medical support at evacuation centers leaves much to be desired even if they do provide shelter and sustenance. Common basic issues are privacy, hygiene and nutrition. Many survivors are located in large facilities with little privacy, with families divided by cardboard boxes in crowded school gyms. Emergency toilets are often built outside the buildings in open-air places.

It was also cold for some time post-3/11 and heating was limited. As summer became hot, the lack of air conditioning made conditions uncomfortable. In the cold weather many people, especially older people, restricted their eating and drinking because they did not want to wake up in the middle of night to walk to the outdoor toilets. This caused many to suffer from dehydration and malnutrition as in Kobe (Tanida 1996; Ōtani 2010: 21).

The potential for infectious disease outbreak was a major concern, but so far this has been avoided. Tap water and sewage systems were destroyed, and evacuees were advised to wrap their stools in newspaper and place them in a plastic bag. But when patients with acute gastroenteritis suggestive of norovirus infection were found at an evacuation center in Iwate, the medical relief team facilitated improvement of hygiene measures, introduced chlorine-based disinfectants, and promoted accurate knowledge of virus transmission (Yamamoto *et al.* 2011).

The immediate threat of an epidemic of diseases associated with poor hygiene and sanitation has been averted with no serious large-scale outbreak, but malnutrition has affected some survivors. At many scattered evacuation places where distribution was inadequate, even more than one month after 3/11, only small quantities of bread and *onigiri* (rice balls) were delivered and people had to live without fresh vegetables and fruit for a long time. The situation was so dire that some NGOs started to charter helicopters to drop vegetables to areas inaccessible by road. In addition, cooperatives and commercial delivery firms such as Yamato and Sagawa helped deliver necessary items and ease shortages in areas accessible by road. In contrast, after the 1995 Kobe earthquake, people might have had to survive on bread and *onigiri* for only two or three days, but soon were able to eat more balanced meals thanks to efficient aid distribution, again reflecting the relatively intact transportation infrastructure.



FIGURE 14.1 Temporary toilet set up by Ministry of Land, Infrastructure, Transport and Tourism (MLIT) at evacuation center (Kesennuma Gym). Infectious disease control sign put up by public health nurse: “If diarrhea, see medical staff,” April 14, 2011 (taken by author).

Lack of physical activity by those living at evacuation centers is also a health risk. Deprived of their daily routines and chores, older people started to suffer from economy class syndrome – blood clots associated with long distance airline travel. This can be life threatening. Medical teams regularly visit evacuation centers to

Public health issues

Since the tsunami swept away everything, people at evacuation centers lacked basic necessities such as toothbrushes for daily oral care. Public health practitioners cooperated with leading oral hygiene firms such as Sunstar to teach evacuees how to clean and brush their teeth without toothbrushes and toothpaste. Signs were put up at evacuation centers and also advertisements were placed in newspapers.

Emergency temporary toilets were also set up at evacuation centers to stop the spread of infectious diseases. Evacuees kept them clean while public health nurses raised awareness by putting up signs like: “If diarrhea, see medical staff.”

Public health nurses’ heroic post-3/11 work has earned them well-deserved kudos. Immediately after the earthquake, many public health nurses went searching for survivors, usually older people they had been regularly visiting, to make sure they were okay. They carried out their duties even though they themselves lost family members, and suffered damage to their housing and workplace, often not sleeping for days right after the earthquake. In many towns, records were destroyed but the public health nurses continued to serve the community under trying circumstances and then extended their mission by delivering aid and improving health conditions at evacuation centers. As in Kobe, they will continue to play a critical health role in the temporary shelters for quite some time. Minsei-iin (welfare-commissioner who is not paid – voluntary work – but has long established trusted position in Japanese society) also played a critical role in several communities in Kobe as they are doing so in Tōhoku (Ōtani 2010: 36). Public health officials and volunteers used the Internet and Twitter to cope with public health issues by gathering information about needs and directing deliveries of food, clothing, blankets, children’s books and other sundry items such as sanitary pads and diapers to where they were needed.

Mental health care

Public health authorities in Kobe early on focused on addressing various mental health issues. The Hyōgo Prefecture Department of Health public health survey for earthquake-affected households was conducted every year from 1996 to 1999. The survey collected data that enabled public health authorities to identify increased problems of alcohol dependency, in addition to nutrition and diet issues (Ōtani 2010: 73). Some people died of malnutrition that was triggered and accompanied by alcohol dependency.

Since Kobe, *Kokoro-no-care*, a concept encompassing mental health care and psycho-social support, has become a watchword for helping post-disaster communities recover. International media coverage drew attention to post-3/11 mental health problems and inadequate attention by Japanese public health authorities (McCurry 2011). However, this criticism drew a sharp response from Japanese experts because it did not adequately reflect the capacity of Japan’s health system and the lessons it learned from the 1995 Kobe and 2004 Niigata Earthquakes.

These previous disasters provided training opportunities for traumatic stress counseling and national guidelines for post-disaster mental health over the past few years (Suzuki and Weissbecker 2011; Kim and Akiyama 2011). McCurry's suggestion that Japan was completely ill-prepared to provide mental health support for disaster survivors was overstated and sensationalist. Certainly many people are suffering from staggering personal and material losses that would tax the capacity of any nation's mental health services, but resources and counseling are available and public health officials are very sensitive about this issue. They have learned from previous disasters and have prepared so that they can provide support for those who need it, although this might not always be sufficient. Tōhoku will be another learning experience to improve preparation for future disasters; it is always possible to find shortcomings, but emergency disaster preparedness is cumulative, incrementally improving, adjusted for each situation and unfortunately never fully comprehensive.

PTSD (post-traumatic stress disorder)

PTSD is usually associated with war, but is equally common in disaster situations as people become overwhelmed by what they have experienced. (Kutchins and Kirk 1997: 102; Ikeno chapter in Kwansei Gakuin University COE Disaster Reconstruction System Research Working Group 2005). Ikeno (*ibid.*) introduced concepts based on the 1995 earthquake such as counter-transference, burnout, secondary traumatization and vicarious traumatization. Anecdotal reports and preliminary observations suggest that these problems are observed widely among people affected by 3/11, including those who worked in rescue and relief operations.

Those who survived, but lost family members and/or friends express their pain. A schoolgirl said that class was going out for recess and she asked her friend to wait for her in the classroom while she went to the toilet. When she returned, the tsunami had swept her friend away causing her to feel guilty that she caused her friend's death. Many other survivors suffer from this "survivor's guilt." Firemen also blame themselves for not saving more people, wondering if they could have done more. Overall, the heroic actions of firemen have earned them considerable praise in the media, but preliminary reports indicate that many firemen in the disaster-affected areas are suffering mentally and some express their wish to leave the occupation. One can also imagine that members of the SDF who served for prolonged periods in the disaster zone and were engaged in the grim task of recovering bodies must also be suffering to varying degrees from PTSD.

Religion and post-disaster prayers

Religion plays a critical role in disaster-affected areas. Often it is the elderly who are most observant and find greatest solace in religious devotion. It is a source of hope for those living with despair. Postwar Japanese society is known for not being

very religious, mostly involving ritualistic observance of Buddhism and Shintoism during life-cycle celebrations and commemorations. However, religious associations have national networks that can help channel practical and emotional/spiritual support in the disaster-affected areas. Local temples and shrines have community networks that facilitate relief activities especially in rural areas. Christian groups in Kobe went to a completely destroyed area in Iwate in order to erect a cross where there had been a church, thereby giving encouragement and hope to parishioners, letting them know they were not alone and could rely on a wider community of believers. International Christian religious networks have also been active in Japan, raising money and supporting relief activities while a Korean Buddhist group worked in disaster affected areas.

Health hazards

Asbestos was a popular building material in the twentieth century because of its fire retardant and insulation qualities. It was discovered, however, that asbestos causes lung cancer and it was banned in many countries. Japan did not impose such a ban until 1995, meaning that older buildings damaged by the earthquake and tsunami in 2011 pose a serious threat to public health. In the weeks following 3/11, clouds of dust whipped up by strong winds enveloped many devastated communities and thus there is considerable concern that many survivors and rescue workers have been exposed to asbestos. SDF members were issued special masks, but many people used simple paper masks during clean-up operations that might not have been effective in blocking the asbestos particles.

Radiation is another major health hazard that is arousing public anger and concerns about food safety and the well-being of children. In Fukushima, another prefecture with many elderly, the evacuations of households within 20km of the plant has caused extensive disruption and spread uncertainty. There is no clear timetable for their return. Many farming households in neighboring rural communities have been ruined by radioactive contamination because of bans on shipping of their produce or livestock. The capacity for older farming households to hang on and recover from this major setback is doubtful, suggesting the government needs to fine-tune its compensation and relocation policies in Fukushima and other affected regions.

It is indicative of altruistic spirit that a group of more than 200 pensioners all over the age of 60 volunteered to participate in tackling the nuclear crisis at the crippled Fukushima power plant. This Skilled Veterans Corps gathered retired engineers and others with relevant professional expertise who offered to face the dangers of radiation to spare younger workers from exposure that might cause long-term health consequences. The government expressed gratitude for this selfless offer but declined to take them up on it. Yamada Yasuteru, leader of this silver corps, explained, “We are not kamikaze. The kamikaze were something strange, no risk management there. They were going to die. But we are going to come back” (BBC 2011).

Building temporary shelters

The government had promised to build 52,000 temporary homes in the region by August 2011, but by the middle of June, only about half had been completed (McCurry 2011). This process was slower than expected given Japan's accumulated know-how. When the 2005 Fukuoka Earthquake occurred in Kyūshū, temporary shelters were built much more rapidly than in 1995 Kobe, suggesting a greater level of preparation (Ōtani 2009). Following the May 12, 2008 Sichuan Earthquake, the Chinese government was very quick to build temporary shelters drawing on experiences abroad, mainly Japanese, and drew up a plan only one week after the earthquake. They actually started to build on May 19, and survivors started moving into temporary shelters by May 29, 2008 (EERI 2008: 10; Ōtani 2009). In Kobe, by contrast, it took three months to get started building temporary shelters. In Kobe, we learned it is important to pay special attention to elderly and disabled in both allocation and design of temporary shelters. The shortage of common space, green areas and adequate living facilities can have an adverse impact on the mental health of residents and in building a sense of community (Ōtani 2010: 97; Hirayama 2000).

The government has been criticized for its slow response to 3/11 in general, but despite considerable obstacles it did manage to build over 27,000 units by the end of May, only ten weeks after the disaster struck. Flat, high ground not too far from devastated communities was limited and transport infrastructure was badly damaged. A surprising development is that many of the temporary units went unoccupied even after being allocated because evacuees who left the evacuation centers faced loss of critical government financial and nutritional support as well as



FIGURE 14.3 Temporary shelters being built at Kesenuma middle school ground, April 14, 2011 (taken by author).

access to timely information on post-disaster life recovery and thus could not afford to relocate. There were TV interviews with elderly who have refused to move and they complained about the rigid rules that deprive them of benefits and the possibility of being separated from their communities.

Elderly in disaster

One of the major features of this disaster was that it hit areas with a high level of population ageing (Yamamoto *et al.* 2011). More than 30 percent of evacuees are aged over 65 and many suffer chronic diseases such as hypertension, diabetes and heart disease. One of the major challenges for health providers was to identify the medicines that patients had been taking. Frequently, older patients do not remember the names of their pills and pharmacy records were often lost in the tsunami. Pharmacists, working closely with evacuees, played a crucial role in the identification and selection of pills and alternatives.

Previous experiences indicate the need to pay special attention to older survivors and take care not to leave them in isolation, especially those lacking extended family support (Ōtani 2010: 132). *Kodokushi* (dying alone) became a major issue following Kobe as the media covered the plight of lonely elderly living in isolation without the mental or physical resources to cope with such a traumatic disruption of their lives on their own (Ōtani 2010: 39).

To prevent isolation, it is critically important to design common space that facilitates daily interaction. So it is not just a case of numbers of units or seismic strength, but also creating aesthetically attractive compounds with barrier-free design for the elderly and the disabled. Yet news reports from Tōhoku pointed out that temporary shelters in Ishinomaki were built with a 14 cm gap in the floor heights so that going to the bathroom is unsafe for older people.⁴

The lessons of Kobe also suggest the need to rethink “temporary” as many residents remained in these compounds for three years. The types of amenities and facilities should reflect the reality that many evacuees may end up staying for considerable period of time in these temporary compounds.

Enhancing older people’s post-disaster life at temporary shelters

At temporary shelters, as learnt from the Kobe experience, it is important to create an environment that does not leave older people alone. The increasing risk of *kodokushi* (dying alone) has been a concern for government, media and volunteers. Location of temporary shelters is important as older people (many of whom have physical weakness or disability) need to do daily grocery shopping and be able to see a doctor and friends. In addition, it must be a place where public health nurses and volunteers can reach – this has been a challenge in Tōhoku as the disaster area is vast in a mountainous coastal zone and the evacuation sites are scattered widely. Compounds should be designed to promote communication between neighbors while maintaining a degree of privacy. The lack of privacy has been one of the

problems at the evacuation centers. The hardware (temporary housing units) of recovery needs to be complemented by appropriate software (services and sense of community) that nurtures life support networks. The building of temporary compounds must serve this function and given the high proportion of elderly evacuees there needs to be an emphasis on community building and bonding to prevent loneliness and isolation. In addition to regular visits to monitor well-being, it is important to organize community events that bring people together such as holding regular tea parties in the community center or establishing clubs for karaoke, Japanese chess, cooking, etc. and to stage seasonal festivals that will appeal to different types of older people. When assigning people temporary shelters, the Kobe experience suggests the government needs to be careful about creating the right demographic mix. In Kobe, by giving priority to older people, the temporary shelter compounds had only old frail people in need of care with little community support. In addition, it is important to assign units in light of the frailty of the elderly and ensuring that access to transportation and shopping is not difficult and placing them close to the entrance of the compound. In such ways it is possible to enhance the life of the elderly at temporary shelters.

Conclusions

While international aid and media attention may peak in times of disaster, they are not usually sustained for long after the emergency while many survivors have a great need for long-term support (Ōtani 2010: 18). Challenges remain long after international attention fades away. As to medical and health impact, experts suggest that it is necessary to keep monitoring the disaster-affected cohorts, for example, for mental health issues such as PTSD (Takei, N. *Asahi Shimbun* August 5, 2011). Providing accommodation and job opportunities are a foundation of post-disaster life reconstruction. Providing temporary shelters is not simply a matter of building shelters to meet numerical targets, but also must serve the needs of the residents. On the other hand, infrastructure alone cannot relaunch the life of survivors. It is a combination of hardware (facilities) and software (services) adjusted to specific needs that are crucial to establishing an effective community-care system. The community creation process can be difficult and labor intensive, requiring significant resources to help ensure success, including time, money and people (Ōtani 2010: 141). There is a process of trial and error to see what works best and what needs to be modified. Accommodating the special needs of the elderly is important in what can be long-term “temporary” housing and also in designing more permanent resettlement solutions. The lessons of 3/11 for other nations with large ageing populations are still emerging, but the high percentage of elderly victims suggests the need to modify disaster emergency procedures in light of their vulnerability to disaster.

Notes

- 1 Cabinet Office, Government of Japan, *Ageing Society White Paper 2011*, p. 7, online, available at: www8.cao.go.jp/kourei/whitepaper/w-2011/zenbun/pdf/1s1s_2.pdf [accessed July 21, 2011].
- 2 *Kahoku Shinbun* June 25, 2011, online, available at: www.kahoku.co.jp/spe/spe_sys1071/20110625_01.htm [accessed August 6, 2011].
- 3 Ministry of Internal Affairs and Communications, Statistic Bureau homepage, online, available at: www.pref.fukushima.jp/toukei/data/hitome/2010/ken/014.pdf [accessed August 6, 2011].
- 4 *Kahoku Shinbun* June 25, 2011, online, available at: www.kahoku.co.jp/spe/spe_sys1071/20110625_01.htm [accessed August 6, 2011].

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