

Report

Long-Term Care Facilities and Government Preparedness for Complex Disasters, including Radiation Disasters, in Taiwan

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Japan has experienced complex disasters in recent years, including radiation disasters, which have made evacuation of older individuals critical. In October 2023, we visited Taiwan, which has an aging population and disaster risk similar to Japan. This study highlights the disaster preparation endeavors of long-term care facilities (LTCFs) and the government using examples of daycare centers for older individuals; firefighting experts conducting mandatory accident and injury prevention; and evacuation drills in response to fire, earthquakes, and other disasters.

The Ministry of Health and Welfare (MOHW) has centralized the management of medical information and information on LTCFs; however, this is not centrally integrated. To facilitate disaster management and evacuation, central integration and management of medical and LTC information is necessary. Reflecting on the aforementioned issues, the integration and management of medical and LTC information at the central and domestic levels and the delay of information needed for disaster management should be considered when considering disaster preparedness for Japan and Taiwan.

Key words: Disaster preparedness, Long-term care facility, Government, Medical information system, Radiation disaster, Complex disaster

1. Introduction

Over the past few decades, Japan has experienced complex disasters that have required innumerable disaster preparedness measures. The 2011 Great East Japan Earthquake and Tsunami not only caused many casualties but also the Fukushima Daiichi Nuclear Power Plant accident, which resulted in severe damage from

radiation exposure. In 2021, a torrential rainstorm centered in the Kyushu region caused 14 deaths in nursing homes for older individuals¹, and responding to flood damage in long-term care facilities (LTCFs) was considered urgent². The number of older adults in need of assistance in the event of such disasters is increasing every year³, as is the number of people certified as requiring nursing care⁴. The Ministry of Land, Infrastructure, Transport, and Tourism and the Ministry of Health, Labor, and Welfare have proposed measures to improve the effectiveness of evacuation at LTCFs⁵, and support for older individuals during disasters has become critical.

The accelerated aging rate in Taiwan is expected to

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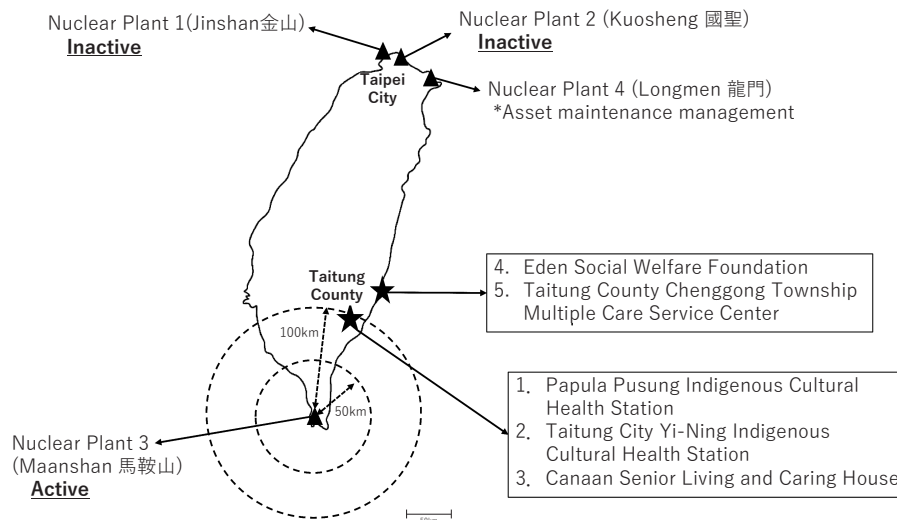


Fig. 1. Location of the nuclear power plants and LTCFs we visited.



Fig. 2. Disaster drills for earthquakes.

exceed 20% by 2025, which is similar to that of Japan, thus contributing to many LTCFs⁶). These LTCFs are also exposed to the risk of complex disasters such as floods, earthquakes, typhoons, heavy rains, and radiation disasters caused by nuclear power plants. Taiwan currently has one nuclear power plant in operation, and the other two have been decommissioned, as shown in Figure 1. Hospitals respond to radiation disasters near nuclear power plants with constant training using simulations and regular exercises and drills⁷; however, no such training program is currently in place for LTCFs.

In October 2023, we visited Taiwan, a country that shares similarities with Japan with respect to an aging society and disaster susceptibility. This study reports on the current disaster preparedness in LTCFs that are located within a 100-km radius of the active Nuclear Plant 3 (Maanshan 馬鞍山) and the efforts of the government

of domestic Taitung County located in Eastern Taiwan with great proportion of the indigenous population and the central government of the Ministry of Health and Welfare (MOHW).

2. Disaster Preparedness in LTCFs

2.1. Papula Pusung (巴布麓) Indigenous Cultural Health Station

This indigenous cultural health station (原住民文化健康站) is a daycare center set up for approximately 70 non-disabled indigenous older individuals who live in the Papula Pusung community. As one of the various activities, firefighting experts are invited to conduct accident and injury prevention and evacuation drills for disaster preparation for fires, earthquakes, floods, and typhoons, as shown in Figure 2. In the event of a flood



Fig. 3. Drums for fire warnings.

that might occur in the Amis tribe (阿美族), traditional tribal drumming is used for disaster evacuation warning, as shown in Figure 3. Each drumming pattern indicates different warnings, and residents have been educated to distinguish between different disasters and informed about disaster evacuation actions.

2.2. Taitung City Yi-Ning (伊寧) Indigenous Cultural Health Station

This indigenous cultural health station is a free daycare center for Yi-Ning community residents with disability grades of 2 or 3 of 8 who require preliminary care support. This facility is open from morning to evening on weekdays, and is staffed by four caregivers and volunteers. This facility aims to provide care services that connect to government care resources to meet the healthcare needs of indigenous older individuals and alleviate the care pressure or burden on their family caregivers. In addition to onsite care, indigenous cultural care services include telephonic greetings, follow-ups for older individuals, caregiver visits, and lifestyle counseling. These services establish the foundation for sustaining multidimensional healthcare and cultural care during disasters.

2.3. Canaan (迦南) Senior Living and Caring House

This Taito Christian facility, which focuses on medical



Fig. 4. Evacuation routes to quickly guide older individuals with dementia.

and community care, is a welfare center for older individuals that forms a continuous network of medical, institutional, and community care to meet the needs of the aging and disabled population. This center acts as a bridge between diverse and high-quality care in home and community care networks, families, and communities. This facility complies with the Nursing Care Safety Ordinance and includes thorough fire safety management and disaster preparedness measures. Furthermore, this facility provides special consideration to older residents with limited motor, sensory, and cognitive functions, and conducts annual fire safety and disaster evacuation drills.

2.4. Eden (伊甸) Social Welfare Foundation

This is a comprehensive LTCF that provides day care, in-home services, and meal delivery services for older individuals in the remote Changbin (長濱) township. Volunteer workers provide meal delivery services and build individual relationships with older residents, which is especially critical for disaster preparedness because of their remote location and isolation during disasters.

2.5. Taitung County Chenggong (成功) Township Multiple Care Service Center

This center provides community-integrated service centers, family care support services, home services, and dementia group homes. To prevent residents with

dementia from wandering outside the facility, the exit doors have been painted as bookshelves to prevent them from recognizing the doors. In addition, the evacuation routes shown in Figure 4 were posted on the walls of the facility, allowing older individuals with dementia to be evacuated quickly and smoothly.

3. MOHW Department of Long-Term Care

Although the MOHW centrally manages medical information in Taiwan⁷, information on the insuree of LTCFs is managed locally instead of centrally. This indicates that older individuals using these facilities are not identified quickly without the assistance of the local government in the event of a disaster, including a radiation disaster. This issue was evident during the COVID-19 pandemic and vaccination. We discussed this issue with an officer of the department, who told us that she was interested in how information on the Japanese LTC insuree is managed and utilized in disasters.

4. Discussion

During our visit to Taiwan, we learned about disaster countermeasures and issues throughout Taiwan by inspecting the LTCFs used by indigenous people in Taitung County and the MOHW. Taitung County is home to a large number of Amis and other indigenous tribes, and disaster countermeasures have been implemented by integrating the indigenous cultural perspectives of the environment, humanistic harmony, and sustainability. However, the Changbin township is a remote and indigenous-based area, which has a greater risk of being isolated during a disaster.

Taiwan has a comprehensive National Health Insurance (NHI) system with a 99.9% coverage rate; however, a Taiwanese LTC insurance system with the same information infrastructure as the NHI has not been established. Moreover, the LTC insurance system is not symmetrically connected to the NHI system, as the LTC insurers are covered by the NHI as well, which has made disaster management of dual insurees of LTC and NHI difficult, as shown during the COVID-19 management in Taiwan. The MOHW is concerned about this, and to facilitate rescue operations during disasters, including radiation disasters, central management of insuree information of LTCFs is necessary, similar to how the MOHW manages medical information in the NHI. The central management of insuree information is a significant issue in Japan as well. At the time of the Fukushima Daiichi nuclear power plant accident, many LTCFs in the Yamagata Prefecture, a neighboring prefecture, accepted older evacuees from the Fukushima Prefecture; however, they reported cases where they had difficulty providing

subsequent treatment and care owing to a lack of information on the medical history and medication status of the older evacuees⁸. The central management and use of user information of LTC insurance facilities to gather information during disasters will take a considerable amount of time.

The LTCFs we visited were approximately 100 km in distance from the currently active nuclear power plant and were outside the PAZ and UPZ, the emergency zones indicated by the IAEA⁹. Therefore, their awareness of radiation disasters is low, and they do not receive any special training. At the time of the Fukushima Daiichi nuclear accident, evacuation orders were issued for special nursing homes in the UPZ, and older individuals in severe need of medical care were evacuated out of the UPZ in Self-Defense Forces convoys¹⁰; therefore, the LTCFs we visited may have received evacuees. This suggests that, while evacuation measures for facilities within the PAZ and UPZ are essential, LTCFs outside these zones also need to be prepared to accept older individuals from LTCFs within their range. In this way, we believe that Taiwan can learn from Japan's experience in preparing for disasters that it has not experienced.

Taiwan has adopted the LTC service from Japan, as it will become a super-aged society after Japan. We intend to observe Taiwan's efforts to utilize the existing centralized medical information system, while taking advantage of the Japanese LTC system and continuing reforms to centralize information on the insurees of care facilities for older individuals. In the future, we need to learn from and teach each other about disaster preparedness from Japan's and Taiwan's experiences and consider disaster preparedness with more emphasis towards older individuals who may need assistance during a disaster.

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Conflict of Interest

The authors declare that they have no conflicts of interest.

References

1. Cabinet Office, Government of Japan [Internet]. Damage Caused by the Torrential Rainfall in July 2020. [updated 2021 Jan 7; cited 2024 Jan 19]. Available at: https://www.bousai.go.jp/updates/r2_07oome/pdf/r20703_oome_40.pdf
2. Daisuke Kamiya, Yoshihisa Akamatsu, Takuya Akahoshi, Mamoru Yoshida. Problems of evacuation action at elderly care welfare facility in case of the heavy rain event of July 2020. Jpn J

- of JSCE B1. 2021;77(1):143–149.
3. Cabinet Office, Government of Japan [Internet]. White Paper on Aging Society 2022. [cited 2024 Jan 19]. Available from https://www8.cao.go.jp/kourei/whitepaper/w-2023/zenbun/pdf/1s1s_01.pdf
 4. Ministry of Health, Labour and Welfare [Internet]. Report on Long-Term Care Insurance Business in FY2021. [cited 2024 Jan 19]. Available at: https://www.mhlw.go.jp/topics/kaigo/osirase/jigyo/21/dl/r03_gaiyou.pdf
 5. Ministry of Health, Labour and Welfare and Ministry of Land, Infrastructure, Transport and Tourism [Internet]. Strategies to Improve the Effectiveness of Evacuation in Welfare Facilities for the Elderly. [updated 2021 Jan 7; cited 2024 Jan 19]. Available at: <https://www.mhlw.go.jp/content/000708299.pdf>
 6. NATIONAL DEVELOPMENT COUNCLE, TAIWAN [Internet]. About NDC Policies Main Operations Publication. [updated 2022 Aug 23; cited 2024 Jan 20]. Available at: https://www.ndc.gov.tw/nc_14813_36128
 7. Chie Kushima, Naoya In, Fu-Chih Lai, Hiroyuki Hanada, Toshiko Tomisawa. The utilization of medical information systems in future radiation disasters: reflections on a comparison of experiences of utilization between Japan and Taiwan. *Frontiers in Public Health*. [Internet]. 2023 Dec [cited 2024 Jan 19];11:[about 1 p.]. Available at: <https://www.frontiersin.org/articles/10.3389/fpubh.2023.1288315/full>
 8. Shinobu Kawakatsu. Support activities for the Great East Japan Earthquake victims in Yamagata. *Jpn J Geriatr Psychiat* 2012;23(2):191–194.
 9. Preparedness and Response for a Nuclear or Radiological Emergency, General Safety Requirements, IAEA Safety Standard Series No. GSR Part 7 [Internet]. [cited 2024 Apr 19]. Available at: https://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf
 10. Mieko Sawa. [Learning from the Great East Japan Earthquake Disaster Countermeasures and Disaster Support that Registered Dietitians Can Provide] From the day we lost our way due to the tsunami and the nuclear power plant accident to the day of recovery. *Nutrition Care*. 2013;6(8):58–62.