

Lessons from and perspectives for healthcare student volunteer activities after the Fukushima disaster

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Abstract – Healthcare students are key resources after nuclear disasters. Healthcare students at Fukushima Medical University volunteered after the Great East Japan Earthquake and Fukushima nuclear accident. At the time of the disaster, healthcare students, who were in a position between medical and non-medical people, listened to the various concerns and worries of victims. Specifically, they established the Fukushima WILL – a disaster medical club. These activities have continued for about 10 years after the Fukushima disaster. In this paper, we introduce lessons from and perspectives for healthcare student volunteer activities during disasters. When volunteering, healthcare students needed to acquire sufficient medical knowledge and skills as well as display effective communication skills considering the background of the affected people. In addition, to respond to potential future disasters, healthcare students need to proactively, independently, and repeatedly learn about diseases that are likely to occur in shelters and how to prevent them. Seminars and workshops should be implemented to ensure students are taught these lessons and provided daily training on disaster response.

Keywords: Education / management accident / nuclear accident / risk communication

1 Introduction

The Great East Japan Earthquake on March 11, 2011, subsequent tsunami, and the nuclear power plant accident resulted in massive human losses (*i.e.*, 15 899 direct deaths; 2529 missing persons as of June 10, 2020 (National Police Agency, 2020); indirect deaths (3739 as of December 27, 2019 (Reconstruction Agency, 2019)) and economic damage to capital stock (16–25 trillion Japanese yen; 130–200 billion Euro (Cabinet Office, 2011)). Natural and nuclear disasters also forced the evacuation of some residents in Miyagi, Iwate, and Fukushima prefectures. This catastrophic event had a severe and ongoing impact on the physical and mental health of the local population through changes in living conditions and other factors (Kako *et al.*, 2014).

In this context, volunteer activities played a key role immediately after the disaster (Tomizawa *et al.*, 2016). These

included students from Fukushima Medical University (FMU), which is located approximately 60 km away from the Fukushima Daiichi nuclear power plant in an inland area that was not affected by the tsunami. FMU students worked to remove debris, distribute food, raise funds, sort supplies, and assist in transporting patients to the hospital (FMU, 2012).

Anderson *et al.* (2016) investigated FMU students and found that the experience of volunteering after the Great East Japan Earthquake was associated with enhancing personal growth but not negative psychological effects, making healthcare students a potentially essential resource for volunteering in the aftermath of a major disaster. In contrast, Kaiser *et al.* (2009) noted that, while most students across America were motivated to contribute after a disaster, there was a disconnect between students' willingness and their ability in disaster responses, and there was a need for better training in disaster medicine.

As the importance of healthcare students' volunteer activities in disaster situations is increasing, it is essential to

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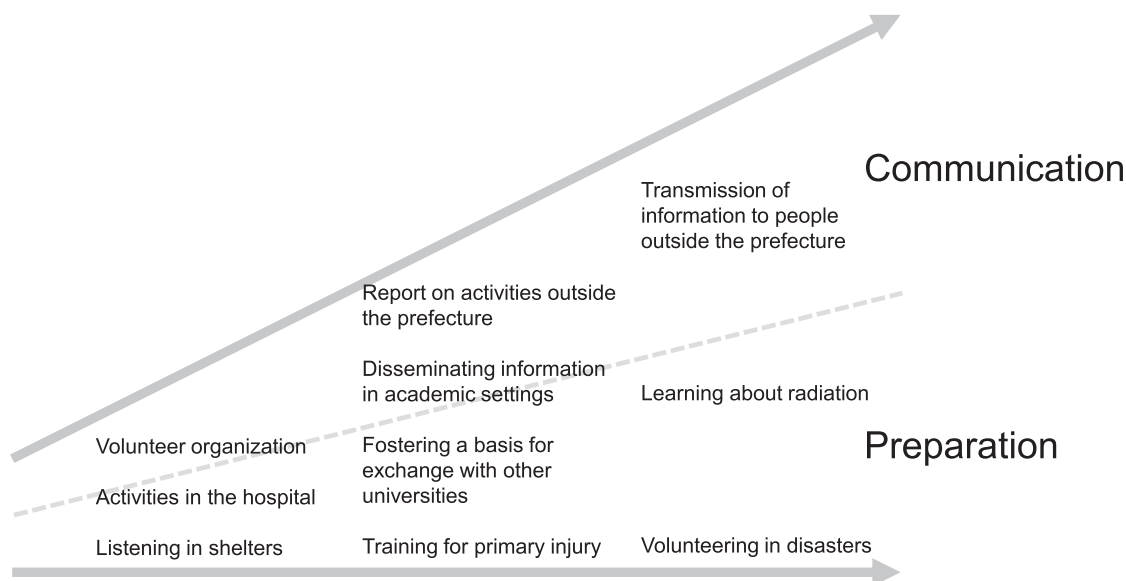


Fig. 1. Healthcare student activities at acute or chronic phases of the Fukushima disaster.

pass on lessons learned and daily training to respond appropriately. In particular, nuclear disasters require a complex understanding of both radiation protection and social psychological issues. There are reports on the collaborative activities of residents, medical professionals, and researchers after the Great East Japan Earthquake (Lochard *et al.*, 2020; Murakami *et al.*, 2017; Schneider *et al.*, 2019; Yasutaka *et al.*, 2020). In contrast, there are few reports on the experiences of such post-disaster volunteer activities performed by healthcare students. FMU students who volunteered in the aftermath of the disaster recognized the importance of communicating the lessons of the disaster and training in disaster response; then, they established the Fukushima WILL (WILL)—a disaster medical club. The group has continued its activities for almost 10 years since the disaster. This paper overviews the volunteer activities at that time and the subsequent chronic phase of the Fukushima disaster. We also discuss the lessons learned from and perspectives for healthcare volunteer activities during a nuclear disaster.

2 Methods

A total of nine students (including then-students) (T. Saito, T. Sekine, N.O., M.S., Y.S., K.O., M.T., H.Y., and M.K.), who played the leading role in the acute phase of the volunteer activities or were representatives of the WILL, looked back on the activities of each generation. All of the students were studying at FMU, and their medical knowledge varied by grade level. They looked back on the activities in terms of purpose, content, duration, partners, lessons learned, challenges, and improvements. Lessons learned and perspectives were extracted from the activities during fiscal years 2011–2012 (acute and sub-acute phases) and fiscal year 2013 and later (chronic phase). The acute phase of the activities started immediately after the disaster, while the chronic phase started in April 2013. The activities have taken place at FMU, at conferences, and in the affected areas.

3 Activity

Healthcare student activities at acute or chronic phases are summarized in Figure 1.

3.1 Acute and sub-acute phases

Immediately after the earthquake, a volunteer organization was formed independently by students who were performing practical training at the hospital. These activities included transportation of goods and patients, securing beds, guiding patients and disaster medical assistance team in the hospital, and making posters for water and electricity conservation. In the early morning hours of March 14–15, 2011, Japan special defense force helicopters and police buses transported several patients at once from within a 20-km radius of the Daiichi nuclear power plant. Under the supervision of emergency department physicians, the volunteer students acted as the mainstay of transporting patients to and from the hospital. They also acted as the main force in transporting these patients to the Aizu and Niigata areas. Soon after the release of radioactive substances from the nuclear power plant, the volunteer organization was temporarily disbanded; however, volunteer organizations were newly formed by students who desired to volunteer after it became clear that the radiation exposure was limited.

Generally, many students were very anxious about the chaotic situation in the middle of the lifeline outages and aftershocks; however, they were unlikely to be overly anxious about health and radiation because they were informed of the radiation exposure status and they had basic medical knowledge, media literacy, and critical thinking skills. The students performed listening activities to people who were affected by the earthquake and tsunami, considering that the affected people may have strong anxiety. The activities were performed by 8–9 students per day for 8 days from March 25 to April 1, 2011, at 15 locations in the waiting area of the medical

school hospital and evacuation sites in the city. After donning white coats, the volunteer students first introduced themselves and told them that they would like the affected people to talk about their lives immediately after the earthquake and on the present day. The volunteer students then listened to the affected people each for 10–40 minutes.

There were two major anxieties among many earthquake victims. The first was “anxieties of the nuclear power plant”. The students who participated in the volunteer activities had heard the latest information about the situation at the nuclear power plant and radiation levels from the hospital. They also understood that they needed to continue to be careful because it was not clear how much the situation would deteriorate in the future. In contrast, unfounded rumors abounded in the evacuation sites; for example, the announced daily radiation doses in the air were lower than actual values, some information was being covered up to prevent the evacuation of people from Fukushima, and the plant might explode. Second, there were “anxieties of evacuation”. Many people in the evacuation sites wanted to live away from the nuclear power plant because of the anxiety they felt; however, evacuating did not necessarily give them all peace of mind. Some were concerned that they might not be able to return to their original place of work if they evacuated and that they might not be able to protect their land and grave that they had inherited from their ancestors. They also wondered what their relatives would think of them if they left the prefecture. Some had concerns that there was nowhere else to go.

In the course of the activities, the volunteer students had opportunities to put their knowledge of medicine and nursing science into practice. In the early stages of the evacuation sites, it was very difficult to maintain privacy among evacuees because the living spaces were partitioned off only with cardboard and other materials. When one volunteer talked to a person who had a living space near the entrance of the shelter, he said, “It is cold; so I try not to move too much. There are other people’s living spaces in front of the toilet; so I have to be careful about going to the toilet, and I do not drink too much water so that I do not go to the toilet again and again”. The risk of pulmonary thromboembolism was thought to have increased owing to the lack of water intake and exercise; thus, the volunteer students advised the affected individuals to drink as much water as possible and to do some exercise. In contrast, the volunteer students sometimes felt frustrated that they could not give professional advice to the affected people despite their position as healthcare students; *e.g.*, anxiety about the shortage of drugs.

The volunteer students also realized that the damage caused by the earthquake was beyond their imagination. One woman who was sitting in front of the stove at the evacuation site, staring at a single point in front of the stove, told the volunteer students that she was hit by the tsunami at her home and had fled to the evacuation site in her own car, risking her life, but she had lost her two grandchildren. The next day, one grandchild had been found. One student (T. Saito) could not help but say, “That is good to hear”. The next moment, she broke down in tears and said that she had already burned him. Reuniting with one’s family after the tsunami did not necessarily mean that they were found safe. The quick words from the listener may have been a burden on the speaker’s mind.

In contrast, there were activities that worked well. One student was talking to a woman of almost 60 years of age who was sitting alone in her living space. She said, with tears in her eyes, “My family was safe; but I was the only one who came to the evacuation site, and I had not spoken to anyone for two weeks. I was so happy to be able to talk about my current situation.”

3.2 Chronic phase

The WILL was established in the summer of 2011, with representatives of five volunteer groups at the time of the disaster as the core. In April 2013, the club was officially approved as a university activity. The primary objective of the organization is to provide information on the current situation in Fukushima Prefecture since the Fukushima disaster. As the health effects after the Fukushima disaster continued to linger, it is perspective for FMU students to widely share the current situation in Fukushima. The second objective is to record and pass on the volunteer activities of students at that time, and to prepare for future disasters. By organically promoting both communication and preparedness, members of the WILL believe that healthcare students can contribute to improving the health of the people affected by the Fukushima disaster while simultaneously reducing the risk of future disasters in other areas.

From the perspective of “communication”, the status of the WILL comprises three main activities.

The first is to disseminate information to the people of the prefecture. Students of the WILL have participated in panel discussions at events that bring together prefectural residents, high school and university students, and celebrities from Fukushima Prefecture. A typical discussion was based on the themes of “From Reconstruction to Innovation” and “Identifying the Real Need for Professionals in the Affected Area”, and focused on the future of reconstruction in Fukushima Prefecture. A presenter (K.O.) thought that the true reconstruction was not to return to Fukushima before the disaster, but to seek a new position in Fukushima and to share the lessons from Fukushima with the whole country and the world. As a representative of the WILL, he declared that the club will continue to work toward recovery, to prepare for the next disaster, and to share the lessons from the Fukushima disaster with students across the country so that they can apply them during disasters across Japan.

The second is the transmission of information in the academic forum. Every year, each of us sets up various themes related to the Fukushima disaster and presents at a medical education conference. As one example, members of the WILL reported a study on the changes in disaster education at FMU after the Fukushima disaster, comparing it with other universities. The content of this report was conducted against the background of enhanced radiology education at FMU after the earthquake (Yasui *et al.*, 2017), and the fact that radiology education was made compulsory in the core curriculum of medical education, which was modified in 2016. It is striking because the educated students themselves reported on the significance of radiology education.

Third, information is transmitted to people outside the prefecture. When a student (M.S.) reported on the current

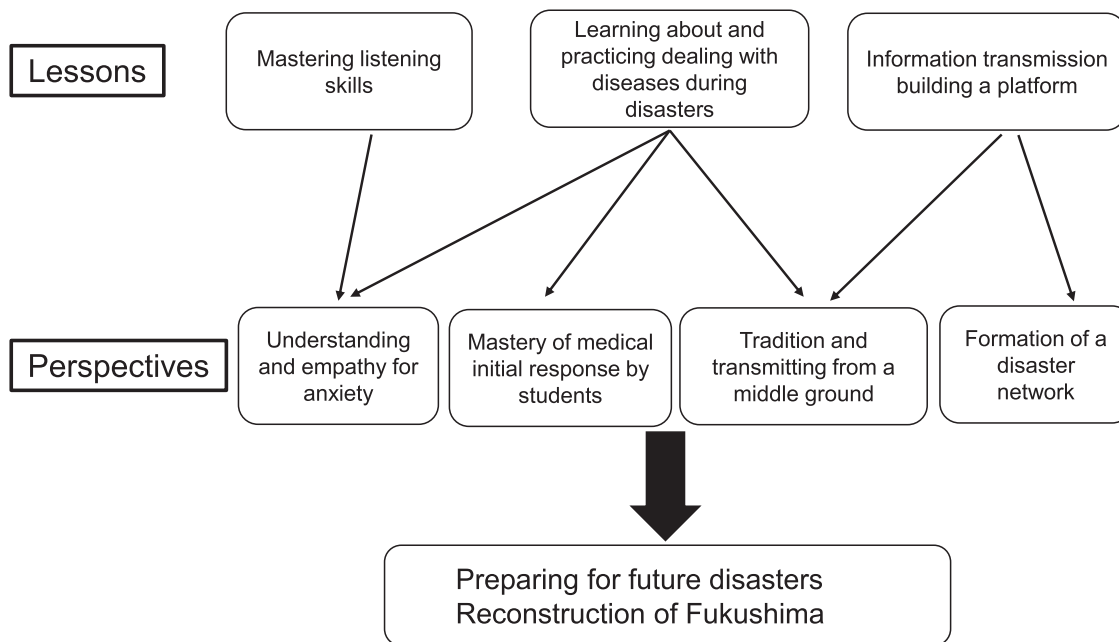


Fig. 2. Lessons from and perspectives for healthcare activities regarding a nuclear disaster.

situation in Fukushima, people from outside the prefecture responded, “It was good to hear about the situation”. Some said, “I was happy to see that healthcare students in Fukushima are working well”, and “Since students are working well, we have to work well, too”. There was also an occasion when local media interviewed us because of the presence of healthcare students from Fukushima. Consequently, the characteristics of healthcare students from the affected areas functioned to disseminate information and build a network outside the prefecture. In addition to domestic activities, another student (K.O.) also presented information to experts outside Japan at international conferences, including the International Atomic Energy Agency’s Consultancy Meeting on Review and Future of Science and Technology Studies Curriculum in Japan in 2017. This presentation was a valuable opportunity to rethink what individuals and society could do to prevent a repeat of the tragedy of the Fukushima disaster.

Concerning “preparation”, there are three main activities.

The first is a primary injury seminar. This activity is based on the experience of being unable to perform basic volunteer work, such as transporting people, when the volunteer students wanted to do so after the earthquake. The WILL has been promoting daily training by holding workshops to ensure that students in the medical field are able to respond to the injured in the event of an earthquake. In addition, when a large-scale disaster occurs, members of the WILL visit affected areas to conduct volunteer activities and put what they learned into practice. In 2019, Typhoon No. 19 caused a lot of damage in Fukushima, and many houses were flooded, especially in Koriyama City. The WILL have also volunteered to set up donation boxes at the school festival and clean up the damaged houses.

The second is a radiation workshop. After the Fukushima disaster, healthcare professionals are the most reliable source of information about radiation for the people of Fukushima

Prefecture (Kohzaki *et al.*, 2015). Social expectations of having expertise in radiation as a healthcare student in Fukushima Prefecture are high, and they may be called upon to help in the event of a possible nuclear disaster in the future. As mentioned above, FMU has enhanced radiation medicine education in medical schools (Yasui *et al.*, 2017); however, active learning is conducted by the students. Lectures by specialists in various fields such as radiation protection, secondary effects of disasters, and mental health have been held. Discussion on social issues has been held among students to give them an opportunity to acquire multiple perspectives on various issues related to the Fukushima disaster. The discussion between medical and nursing students is meaningful from the viewpoint of multi-professional cooperation (Murakami *et al.*, 2018). Many educational institutions also offer classes tailored to students’ concerns and worries about radiation (Kuroda *et al.*, 2021).

In the course of acquiring the above knowledge, students of the WILL also learned about the victims’ situations and their anxiety and learned specific ways to communicate with them from their instructors.

The third is learning about health issues in the chronic phase and developing a foundation for interchange with other universities. Together with various universities, such as Nara Medical University and Wakayama Medical University, students learned from the actual experiences of disaster victims and from experts working in the area. The students went to the affected areas to understand the current situation with our own eyes and to conduct volunteer activities such as listening to the affected people. Through these listening activities, the students learned that there are many people whose psychological scars from the disaster have not yet healed and that it is still necessary to support their emotional recovery. In addition, the WILL continued to learn about the disaster with students from other universities, which helped us

deepen our learning and form a foundation for interaction. These interactions are expected to serve as a basis for mutual support in the event of future disasters.

4 Lessons and perspectives

Figure 2 summarizes the lessons from and perspectives for healthcare activities.

4.1 Lessons

In the acute and sub-acute phases of our activities, we listened to the stories of survivors in many evacuation centers, and their concerns and worries were diverse, including radiation, evacuation, safety of family members, chronic illnesses, and their future lives. As healthcare students, we are in the middle of the spectrum between medical and non-medical people. Such a position has the advantage of ease of listening. In contrast, it was necessary to obtain sufficient medical knowledge and skills to conduct listening activities in disaster areas as well as to acquire sufficient communication skills to fully understand the background of the affected people. To respond to potential future disasters, healthcare students need to proactively, independently, and repeatedly learn about diseases that are likely to occur in evacuation centers and how to prevent them.

It was also meaningful to keep records in the form of photographs, videos, and written notes. The students who were affected by the disaster can keep a record of their experiences at the time of the disaster, which will be a useful source of information for future generations. This information is important for future disaster preparedness to understand the conditions of volunteer activities at that time and the problems they face. In the chronic phase, it was significant to disseminate information and establish a platform to share with the public widely for resolving health issues in the chronic phase as well as to pass on events that occurred in the acute and chronic phases. For the dissemination of information, it was necessary to consider not only the medical knowledge of radiation, but also the background of residents' awareness of radiation, rumors, and their complicated feelings about the unprecedented situation as well as to acquire knowledge of communication.

4.2 Perspectives

An understanding of the general principles of disaster and disaster medical care, an understanding of acute and chronic illnesses that can occur during a disaster, and how to respond to other medical challenges are essential to advance disaster response. In addition, listening and communication skills and an understanding of social psychological factors are vital. Some people in Fukushima still deal with personal issues related to and arising from the Fukushima disaster. By acquiring these skills and insights, healthcare students can contribute to the recovery of Fukushima by understanding and attending to the concerns of people with various anxieties. In addition, healthcare students can also contribute to the early detection of people with symptoms and complications that

require medical attention, which will be useful in the event of future disasters. In addition, building relationships with neighboring residents and volunteer groups in advance can help to quickly form sound networks and promote a helping hand in the event of a disaster.

Activities by healthcare students have the unique characteristic of speaking as a middle ground between professionals and nonprofessionals. In addition, they can pass on the events of the disaster from generation to generation without letting them fade away. The activities of healthcare students who have actually experienced and studied in the disaster area are likely to attract attention from people in and out of the prefecture. In particular, the active dissemination of information abroad by healthcare students is expected to play a role in effective communication and transmission of information on radiation, which can be unfortunately and easily used as a political issue inside and outside Japan (Murakami *et al.*, 2019). Finally, healthcare students can learn a great deal about disaster medicine through these activities, which may prove useful in their future work as healthcare professionals in disaster response. Healthcare students can thus deepen their education about disaster medicine and support activities while simultaneously contributing to society.

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