Volunteer activities and lessons learned by graduate nursing students following the 2016 Kumamoto earthquake

Yuka SUMIYAMA, Mayumi YAMAUCHI, Naoki FUJII, Miyako AOYAMA, Chihiro KOBAYASHI and Toshiko IKEDA

Graduate School of Japanese Red Cross College of Nursing, Tokyo, Japan

INTRODUCTION

An earthquake measuring a magnitude of 6.5 struck Kumamoto Prefecture of Japan on April 14, 2016. Twenty-eight hours later, a second earthquake measuring a magnitude of 7.3 struck the same area (Cabinet Office, 2018). These earthquakes were followed by approximately 4,000 aftershocks (Japan Meteorological Agency, 2017). A total of 50 people died and 218 deaths were later listed as being related to the earthquake (Kumamoto Prefectural Government office, 2018a). Due to the extensive infrastructure damage, destroyed homes and disruption to utilities, more than 180,000 people were evacuated to emergency shelters (Kumamoto Prefectural Government office, 2016). Following the earthquake, the population of nurses dispatched to the affected area to assist in the recovery efforts was reported as being as high as 48.8% of all volunteers (Sakamoto, 2012). This, we believe, demonstrates the importance of the nurses’ involvement in assisting with the maintenance and promotion of survivors’ health, wellbeing and their daily life activities.

The importance of the volunteer nurses’ role following a disaster can be gained from the research of Kato and Asukai (2004), Sugahara et al. (2006) and Yamashita et al. (2014), who reported on the importance of...
providing support to healthcare workers during the recovery period following a disaster. Ishii (2013) reported on the need to listen to survivors express their concerns in order to help reduce their stress levels. Kawakami (2015) was also aware of the need for emotional support, and reported that various physical and mental reactions occur among healthcare workers due to their overwhelming workload.

Some medical and welfare facilities in Kumamoto Prefecture were severely affected by the earthquake (Kobayashi, 2017; Disaster and Crisis Management Administration Division, Kumamoto Prefectural Government office, 2017). This added workload to already burdened facilities and a shortage of healthcare workers (HCWs). This shortage was further exacerbated as the HCWs providing nursing care services were emotionally affected by the earthquake (Kumamoto Prefectural Government office, 2018b).

A medical and welfare facility that engaged in an educational corporation with the Japanese Red Cross College of Nursing (JRCCN) was extensively damaged, and the facility manager was concerned about the shortage of HCWs. Many nurses, physical therapists and occupational therapists who were working as HCWs were affected. Some HCWs had no other choice other than to live in the evacuation shelter, a borrowed apartment or in private cars parked at the facility, because their house was also extensive damaged. As a result, HCWs were becoming increasingly fatigued and exhausted as they continued working tirelessly without days off.

To assist the facility, six graduate nursing students from JRCCN studying in the Disaster Nursing Global Leader Degree Program (DNGL) volunteered to assist HCWs and patients of the facility. They provided assistance by performing daily activities during the immediate recovery period.

In order to determine how and what activities could best be implemented in future disasters, it was considered necessary to develop a framework for evaluating the activities performed by the students. This article reports on the implemented volunteer nurses’ activities to provide suggestions about support activities for nurses who may respond to future disasters.

METHODS

The students (hereafter, we) used a management process (Planning Doing Seeing), as described by Brown (1947). The process has a management function that consists of three stages: Stage 1: Planning; Stage 2: Doing; Stage 3: Seeing. We took field notes and reflected on the process during the activities, and discussed them extensively under the guidance of a professor who was part of the DNGL after the activities. These discussions included developing suggestions about support activities for nurses in future disasters.

RESULTS

Stage 1: Planning

After receiving the news that the facility was damaged, a professor and we began preparations to support to the facility (Table 1).

During the rapid assessment stage, the facility manager expressed concerns about HCWs’ fatigue and exhaustion both physically and emotionally due to continuous working hours. The professor and one of us proposed to the facility manager that they support HCWs, as they considered it was necessary to reduce the workload of HCWs and to allow them to rest. In addition, as a result of the damaged facility equipment, the volume of work for the HCWs had increased.

Logistic support included establishing a system allowing us to share information with each other. It was decided that we would use Dropbox (file-sharing cloud service), Outlook (E-mail) and Line (Social Network Service messaging), to share information and maintain operational security for those students who would be dispatched to the facility.

Stage 2: Doing

Our activities were conducted from May 2–9, 2016. Each student spent 3 days or more at the facility before being relieved additional information by another student. The activities carried out by us to assist in normalizing the work environment and help reduce the stress and anxiety HCWs and patients experienced are shown in Table 2.

Stage 3: Seeing

After returning from the affected area, we met with the professors on several occasions to evaluate the activities and experience gained. The focus was on how to use knowledge gained to support survivors and HCWs in future disasters. The evaluation process was again undertaken 2 years after the earthquake, during which time additional information including feedback from volunteers who provided aid in Kumamoto as well as published articles were included for consideration.

Outlining activities performed during the recovery period, along with the experiences gained as volunteers, assisted us in updating our disaster intervention and planning for
future disasters. This preparation for the activities was considered an important function as it ensured that updated information was provided, along with adequate resources, to best meet the needs of survivors and HCWs in the event of another disaster.

**DISCUSSION**

This report described the activities undertaken by graduate nursing students from the JRCCN who assisted the facility. Next, we will discuss our experiences with volunteer activities in order to obtain suggestions about support activities for nurses in further disasters. By discussing and using the framework, it was possible to connect the suggestions obtained from the volunteer activity experience with future activities.

### Planning

There were three main lessons learned from the planning stage:

#### Using networking pre-disaster

Numada and Meguro (2013) mentioned that a close relationship before a disaster occurrence led to effective inter-organizational disaster support.

In our actual activities, educational collaboration between the university and a medical and welfare facility before the earthquake occurred as a trigger for support activities, and it was possible to decide the schedule of support quickly. Because of this cooperation between the JRCCN and the facilities, we were able to offer support during the disaster. Using the pre-existing JRCCN
facilities network supported deployment of prompt support, indicating the importance of the daily relationship.

Identifying needs in the disaster areas
We and the professor carefully undertook a needs assessment and created proposals to provide support by first evaluating the needs in the affected area and consulting with the facility manager. By examining the post-disaster situation, followed by making concrete suggestions of support, we considered necessary assistance (the manager initially did not identify some of these). This process ensured all parties were aware and in agreement of proposed activities. By undertaking this process, the support given to HCWs were maximized, which in turn reduced the burden on the local HCWs.

Safety preparation for the activities
Three identifiable preparations were important in order to secure the safety of the activities in the affected area and for us to have a safe work environment. The three preparations were: (a) confirmation of emergency contacts and preparation of the security network for the students, families and schools; (b) preliminary information gathering of the affected area; and (c) identification of communication tools. By undertaking disaster response preparations, we were able to do this activity with peace of mind, facilitating our active participation in the activities while sharing information about daily activities.

Doing
‘Doing’ was achieved by undertaking various daily routine activities. There were two main lessons learned from the doing stage:

Attitude towards the HCWs in the affected areas
Our attitude as supporters towards the HCWs in the affected areas may influence the relationship with survivors and the result of support for better or worse. After the Great Hanshin Awaji earthquake, there were various problems regarding the attitudes of volunteers (Nihon Keizai Shim bun, 2011). The attitude of supporters may hurt survivors or make them feel uncomfortable. We were careful not to emotionally hurt HCWs or to make them feel uncomfortable, by respecting and adhering to the facility’s policies and work standards. That may have resulted in the HCWs feeling that they could be open with their feelings and felt comfortable expressing their concerns and anxieties with us. By becoming aware of the stress and anxiety experienced by the HCWs, we were able to arrange a system of support to reduce their burden.

Assistance for supporters who are survivors
Healthcare workers are also survivors, but they continue caring for their patients with little regard for their own health, due to their commitment to their mission. Being aware of the need to support HCWs during the recovery period is an important aspect of the recovery process (Ishii, 2013). We had the opportunity to listen to HCWs’ concerns and anxieties relating to work, while after-shocks were a constant reminder of the precarious situation. In the beginning, we did not realize that these activities were important aspects of mental health care for all the HCWs. However, while hearing their thoughts and anxieties, students began to notice that they were survivors too and required support. Recognizing this as an important mental health support requirement, we endeavored to create a situation whereby all HCWs could speak from the heart.

Seeing
Seeing was achieved by evaluating and reflecting on the activities and experiences. The main lessons learned from the seeing stage were:

Dispatching the students to the affected area
Some 1,688 nurses were dispatched to the affected area. In addition, 6,420 (1,428 teams) medical support teams, such as the Disaster Medical Assistant Team, were dispatched to evacuation centers, relief centers, disaster headquarters and hospitals (Disaster Medical Assistance Team Secretant Ministry of Health, Labor and Welfare, 2016; Japanese Nursing Association, 2016). Despite the high number of nurses and medical teams sent to the affected area, there was a severe shortage of HCWs at the facility where we assisted. Therefore, it is necessary to quickly confirm the situation of all medical and welfare facilities after disasters so that necessary support can be provided. For that purpose, it is necessary to have a system to report the status of facilities and a system to dispatch medical staff to facilities according to that report. In light of this, we demonstrated the possibility of dispatching graduate nurse students who specialize in disaster nursing.

CONCLUSION
- The close relationship before the disaster occurrence can lead to effective inter-organizational disaster support.
- It is important to undertake careful assessment according to what survivors need and propose to
provide support carefully without forcing it on them.

- It is important to secure a safe work environment by undertaking disaster response preparations.
- Promote volunteers’ attitudes that respect and adhere to local policies and also work standards that contribute to the establishment of good relationships with local staff, which in turn facilitates effective support.
- Listening to concerns and anxieties of HCWs is an important aspect of mental health care.
- It is necessary to construct a system that quickly assesses the situation of medical and welfare facilities in an affected area in order to provide the appropriate support.

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AUTHORS’ CONTRIBUTIONS

Each listed author substantially contributed to the literature review and documented the support activities, and had taken part in several meetings discussing the practical experiences. Both Y. S. and M. Y. wrote the initial draft of the manuscript, N. F. and M. A. revised the manuscript and C. K. and T. I. oversaw the research process. All authors have contributed to the manuscript in terms of interpretation of results as well as in the writing of the final version of the manuscript.

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