Pilot study to examine service-learning in disaster nursing education in Japan

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Abstract

Aim: There is a growing trend globally to incorporate service-learning (SL) into disaster health education. Schools of nursing and other health professions have increasingly used SL to improve nursing students’ knowledge of disaster health while simultaneously bolstering community capacity for disasters. To date, little is known about this topic in Japan, a disaster-prone country. This paper reports on current practices of SL in disaster nursing education in Japan.

Methods: An exploratory qualitative pilot study was conducted using key informant interviews. Participants were recruited from a purposive sample of nurse educators in Japan. Five nurse educators were included in the study. Qualitative data collected from informant interviews were analyzed for themes using qualitative thematic analysis techniques.

Results: Themes extracted from the data included: specific SL activities performed; faculty involvement; perceived benefits for nursing students and recipient communities; and challenges encountered. Participants described an increase in nursing students’ disaster nursing knowledge; skills and abilities; a heightened interest in learning about disaster nursing; and increased awareness of their personal preparedness status and that of their community. Community members also benefitted from students’ efforts.

Conclusions: Results from this pilot study provide baseline knowledge regarding current practices and potential effect of SL disaster nursing education in Japan. Findings from this study may be used to serve as a foundation for further research on this topic. Information from this study may also be used to plan SL activities related to disaster nursing education.

Key words: disaster preparedness, Japan, nursing education, qualitative research, service-learning

INTRODUCTION

Disasters exact a major toll on the health and safety of persons, communities and countries. Between 2005 and 2015, more than 1.5 billion people worldwide have been affected by disasters, with over 1.4 million people injured and 700,000 lives lost (United Nations, 2015). Nearly 40% of disasters occurring during this period occurred in the Asian region (Guha-Sapir, Below, & Hoyois, 2017). Japan is a country in this region especially susceptible to disaster events. The country is frequently exposed to powerful and destructive tropical cyclones, earthquakes, tsunamis and volcanic eruptions due to geographic, topographic, meteorologic and other factors (Japanese Red Cross Society, 2015; Mimaki, Takeuchi, & Shaw, 2009).

Major earthquakes and various other types of disasters experienced in Japan have spurred significant interest in disaster health research in the country (Kako, Mitani, & Arbon, 2012). In the wake of the Great Hanshin-Awaji (Kobe) earthquake of 1995, Japanese educational and professional nursing organizations sought to bolster nurses’ capacity to provide care in disaster situations and improve community disaster preparedness efforts. Since that time, disaster nursing education programs have
been created to equip nursing students and professionals with the knowledge, skills and attitudes necessary to provide immediate, mid- and long-term care to survivors (Yamamoto, 2013). All nurses in Japan are now expected to receive some education in disaster nursing (Kako et al., 2012).

There is increasing inquiry among schools of nursing in Japan regarding how nurses should be involved in communities to protect them from disaster. A literature review (Kako et al., 2012) analyzing articles on disaster nursing education in Japan between 2001 and 2007 recognized a need for deeper community involvement in various aspects of disaster preparedness. Authors of the literature review concluded that disaster nursing education can serve as a “hub” for building up capacity in the community (Kako et al., 2012). One approach to merging academic curriculum with community preparedness efforts is the integration of service-learning into disaster health education.

Service-learning

Service-learning (SL) is a teaching–learning strategy that provides learners with hands-on experience in real-world settings while simultaneously providing service in partnership with the community. Students reflect on service activities in ways that deepen understanding of course content, broaden appreciation of their discipline, and enhance their sense of civic duty. Service provided by students during SL is organized and planned with community members to meet identified community needs (Bringle & Hatcher, 2009). It has also been widely incorporated into health professional education with the goal of preparing community-responsive and competent health professionals, fostering citizenship and achieving social change (Andrus & Bennett, 2006; Dalmida et al., 2016; Murray, 2013).

Service-learning in community disaster preparedness and response

There is a growing trend globally among academic programs of various disciplines to use SL as a means to involve students into community disaster preparedness and response efforts (Bowen, Richmond, Lockwood, & Hensley, 2012; Brungardt & Arnold, 2009; Davies, Deeny, & Raikkonen, 2003; O’Steen & Perry, 2012; Sescon & Tuano, 2012). Health professional training programs have partnered with disaster agencies, local health departments, or other community groups to integrate elements of SL into disaster health curriculum. These activities leverage the reciprocal nature of SL to help students develop disaster health competencies while at the same time bolstering community disaster preparedness and response capacity. SL activities have involved all phases of the disaster management cycle from prevention, preparedness, response and on through recovery. For example, students have educated community members on disaster preparedness so that they are better able to take care of themselves and their families during future disaster events (Adams & Canclini, 2008; Culley, 2010; Scoggin et al., 2014). Nursing and other health professional students have participated in public health emergency drills, mass-prophylaxis, and vaccination exercises, or outbreak and disease investigations (Adams, Canclini, & Frable, 2015; Culley, 2010; Macdonald, Davis, & Homey, 2010). Academic institutions have assisted communities by involving health professional students in community disaster response and recovery operations following major storms and other disasters (Downes, Connor, & Howell, 2014; Leung, Liu, Wang, & Chen, 2007; Richards, Novak, & Davis, 2009; Steiner & Sands, 2000; Wondmikun, Feleke, & Tafete, 2005). In these situations, students rendered aid to disaster victims by providing health education, immunizations and healthcare services, and other public health interventions.

Student involvement in disaster-related SL activities has been shown to promote the development of skills important to working competently in disaster situations, including interdisciplinary communication; collaboration and team building; information management; teaching ability; leadership; and community assessment skills (Leung, et al., 2007; Richards, et al., 2009; Steiner & Sands, 2000). Disaster-related SL activities have also resulted in students’ overall understanding of community influence on health, their sense of civic responsibility, and an enhanced awareness of the challenges in providing disaster relief.

These examples illustrate the fact that the application of SL is a globally accepted means of improving health professional students’ disaster-related competencies while simultaneously preparing communities for, or responding to such emergencies. To date, little has been reported regarding the use of SL in disaster nursing education in Japan. An exploratory qualitative pilot study was conducted to examine current uses and effect of SL in disaster nursing education in Japan. This article describes the results of this study, including specific SL activities performed, perceived benefits for nursing students and recipient communities, and challenges encountered.

METHODS

An exploratory pilot study was conducted using qual-
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The University of Hawaii at Mānoa Human Studies Program approved this study as exempt from federal regulations pertaining to the protection of human research participants. The study was conducted by three researchers. Two researchers were from the United States and one was from Japan. All researchers had a significant background in disaster nursing, education and research.

**Sampling and study participants**

The names and email addresses of faculty engaged in disaster nursing education in Japan were obtained through consultation with a research team member who was a faculty member at a Japanese nursing school, and from school websites. A purposive sample of Japanese nurse educators was identified and invited to participate in the study. The sample included undergraduate- and graduate-level nurse educators from public and private institutions from many regions of Japan. An email was sent describing the study’s aim, purpose, and methods. All information was provided in both Japanese and English. Response to the email was considered consent to participate in the study. Criterion for inclusion in the study included the use of SL in disaster nursing education at any level.

Of the 18 individuals who were contacted for screening, 10 (56%) responded. Among those who responded, five (50%) were considered eligible for inclusion in the study. These respondents were contacted for follow-up qualitative interviews.

**Data collection**

Interviews were conducted in-person or via Skype between May and July 2016. Interviews lasted an average of 45 minutes in length and were conducted in Japanese and English based on the preference of the participant. Two researchers conducted the qualitative interviews using a semi-structured interview guide. Handwritten notes were taken during the interviews. Each participant was assigned a unique code number, and no personal identifiers of any kind were noted. All study materials were stored in password-protected files on a computer only available to the research team.

**Data analysis**

Qualitative interview data were analyzed using qualitative thematic analysis techniques (Braun & Clarke, 2006). Handwritten notes from the interviews were typed and then read multiple times by two researchers working independently. First, the researchers read the notes in their entirety to gain familiarity with the data, then reread the data systematically to generate initial codes. The researchers then worked together to compare codes. Differences in codes between researchers were discussed and mutually resolved. Codes were sorted and combined to generate overarching themes and subthemes. Themes were reviewed and refined to ensure they accurately reflect the data set as a whole. An audit trail consisting of raw data and memos was maintained and made accessible for audit.

Strategies were used to enhance the credibility of the research findings (Krefting, 1991). During the interview process, participants were asked the same questions in various ways to confirm and expand upon data collected. Notes were read back to participants to confirm the accuracy of what was notated to avoid misrepresentation. Participants also provided course documents that were analyzed in addition to interview data.

**RESULTS**

Five individuals from four nursing programs were interviewed, and data from these interviews were included in the analysis. Four participants had actively used SL in disaster nursing education activities. One participant was still in the planning phases of incorporating SL into disaster nursing curriculum. Participants represented both undergraduate (n = 3) and graduate (n = 2) programs. Overarching themes of the qualitative data included: community-based SL activities; academic SL activities; faculty support and facilitation; student and community outcomes of SL; and challenges encountered. While community-based SL activities varied among informants, themes related to academic SL activities, student learning outcomes and community outcomes frequently overlapped across all cases.

**Community-based SL activities**

Three basic methods for implementing nursing student SL in disaster education in Japan emerged: one-time participation in a community disaster drill; weekly participation in community disaster preparedness education; and disaster response in a post-disaster area.

*One-time participation in a community disaster drill*

Nursing students participated as active members of a city disaster evacuation drill. Students helped to set up evacuation shelters prior to the drill. During the drill, nursing students worked collaboratively with municipal public health nurses and other city staff at the evacuation shelters. They collected health-screening information and discussed health and medication concerns with commun-
Faculty members encouraged students to think critically about situations they encountered. Students who responded to the earthquake disaster were encouraged by faculty to not only focus on personal interactions with affected individuals in the community, but also on broader population-level or systems-level issues. Undergraduate students were precepted by nursing faculty, while graduate students worked independently without preceptors.

**Faculty support and facilitation**
Faculty efforts were key facilitating factors in each of the cases described. Nursing professors actively sought out opportunities for student SL, collaborating with multiple stakeholders to identify potential student activities. Faculty consulted with both students and community members prior to SL activities, asking students for suggestions on what they believed they could contribute, and providing such input to community planners. One professor was a member of a local community disaster preparedness committee, whose long-term involvement and commitment to the committee facilitated student interaction with and integration into the community group.

In the immediate aftermath of the earthquake disaster, nursing faculty consulted with each other on how to involve graduate nursing students into disaster relief efforts. They identified contacts within their personal networks located in the disaster-affected areas in order to link students with response teams. When a contact working with a non-profit relief agency was identified, nursing professors arranged to send students to the disaster area to liaise with that agency. Upon arrival, students were required to seek out ways to contribute to response efforts, relying upon just-in-time training to assume responder roles. Faculty supported these students from afar, communicating with them via phone or email daily, and providing financial support for travel, lodging, and other expenses. Faculty members committed to deploying students to this disaster area on a regular basis, continuing to send students to the same community site as the disaster response operation transitioned into the recovery phase.

**Outcomes of SL**
The key informants reported that outcomes were measured based on their observations and opinions; communication with students or observation of student activities; student reflective reports; or interactions with community members and partner agency staff.

**Student learning outcomes**
Informants noted that students experienced increased...
knowledge, skills, and abilities related to disaster nursing, and an increase in community awareness.

**Increased knowledge of nurses’ role in disaster preparedness and response**

After SL experiences, informants described that students increased their knowledge and awareness of their own disaster preparedness and that of their family. They developed an enhanced awareness of their community’s disaster preparedness status and expressed interest in becoming more involved with community disaster preparedness efforts. Students developed a better understanding of the nurse’s role in preparing for and responding to disasters and expressed interest in learning more about disaster nursing.

**Increased ability in disaster nursing skills**

Informants remarked that students improved their population health assessment skills, becoming better able to identify needs of vulnerable populations during disasters and recognize what needs were not being met by ongoing disaster response efforts. Students also improved both their oral and written communication skills, becoming better able to communicate with community members, as well as more accurately documenting assessments and activities. Leadership and followership skills were also developed during SL through working as collaborative partners on teams composed of public health nurses, community members and other professionals.

**Increase in community awareness**

Students reported to the faculty informants that they experienced an increase in community awareness as they became more attuned to community activities and groups. They reported positive interactions with community members and became more comfortable with people of older generations.

**Community outcomes**

Informants also remarked that community members expressed enthusiasm and gratefulness for student involvement in their efforts. Student involvement at community disaster preparedness meetings led to increased meeting attendance. Involvement of young people with the generally older group of community residents encouraged members to view young people as resources and to consider how better to incorporate young people into community disaster planning. Community members also described new connections and networking through partnering with nursing schools.

Partnership with nursing students resulted in good publicity for the community and schools involved. Student efforts during the disaster response led to increased community outreach and identification of needs that were not being met. Input from student nurses influenced disaster planning and response agencies’ activities. During the earthquake response, students assessed a need for better management of spontaneous volunteers who presented at the disaster relief agency. They devised a volunteer registration and management system for the community agency to match volunteer skills and abilities to community needs. The system the students implemented resulted in increased efficiency of agency activities and decreased stress on volunteers and relief agency staff.

**Challenges encountered**

**Limited time and budget for SL**

Key informants described having limited time and budgets to include SL activities into course schedules. In some cases, community sites were far from the school, requiring faculty and students to travel long distances. Transportation costs and time required to travel presented logistic challenges. Developing and maintaining SL activities also required heavy faculty time commitment. Stakeholder turnover at community agencies made maintaining contacts within agencies difficult. Established connections with community agencies could not be sustained without a strong commitment by faculty.

**Challenges related to disaster response**

Nursing faculty encountered many challenges when sending students to participate in SL disaster response. The academic schedule conflicted with the earthquake disaster response schedule, requiring nursing faculty to adjust course schedules to accommodate disaster response activities. Assuring student safety during disaster response was also a challenge for nursing faculty. Finding contacts to link students into community efforts immediately after the earthquake disaster occurred was another challenge encountered. Faculty members did not have formal ties to any community agency in the affected area prior to the disaster occurring and had to rely on personal contacts to develop the student SL experience.

Additionally, students and faculty found difficulty in maintaining balance between providing service to the community and achieving academic learning requirements. Furthermore, when reflecting on their experiences, students tended to focus too narrowly, not always taking...
population-level or systems-level issues into consideration. Finally, as the disaster response progressed into the recovery phase, nursing faculty were challenged with how to keep student learning relevant, as efforts shifted from population-level services to individual care.

Challenges for students working in the community
Faculty also reported that students encountered challenges while interacting with the community, in some instances feeling overwhelmed or frustrated by their experiences working with community members. For example, students found themselves in the middle of disagreements between community members. Students also encountered generational differences with older community members. Tension also existed among community agency staff. During disaster response operations, local public health nurses experienced stress related to incorporating work with students into their other responsibilities.

DISCUSSION
The aim of the study was to identify current practices and effect of nursing student SL in disaster education in Japan. Findings from this study also show multiple benefits to student learners and communities. For students, faculty noted that SL improved disaster nursing knowledge, skills and abilities, and promoted a positive attitude and increased interest towards learning more about disaster nursing. Faculty also remarked that students became aware of their own individual and family preparedness status, and gained interest in community disaster preparedness efforts. These findings are consistent with reports from other health professional schools’ experiences after involving students in community-based disaster preparedness education (Adams & Canclini, 2008; Scoggin et al., 2014). This suggests that Japanese nursing students benefit from disaster-related SL in similar ways to their non-Japanese counterparts.

Results of this study show numerous community benefits in terms of community disaster preparedness. Community groups described to faculty their enthusiasm about student participation in their disaster preparedness activities, which had the effect of injecting renewed energy into their groups by bringing in new members to their meetings. The positive exchange between students and community members may contribute to feelings of community connectedness and result in an increase in community participation. This is an important community outcome of SL in disaster nursing education in Japan. A study examining predictive factors for earthquake preparedness in Japanese communities found that community participation and collective efficacy (community members’ ability to assess their capabilities and resource needs and formulate plans to confront challenges) are important factors predicting the likelihood of individuals to prepare for disasters in Japan (Paton, Bajek, Okada, & McIvor, 2010). The increased interest and participation in community-based disaster preparedness that resulted from nursing student SL may result in higher numbers of people following through on family disaster preparedness plans and lead to enhanced community disaster preparedness.

Many Japanese communities are extremely vulnerable due to their location in coastal areas and populations composed of high proportions of adults aged over 65 years (Mimaki et al., 2009). Neighborhood-level disaster preparedness committees have been organized throughout the country, established to improve community disaster preparedness (Mimaki et al., 2009). The members of such groups are mostly older adults aged ≥60 years (Bajek, Matsuda, & Okada, 2008). The inter-generational exchange between students and older community members described in this study resulted from each group learning from each other. Such exchange between community members may lead to more robust community preparedness because more unique perspectives are added to community planning discussions.

Results from this pilot study provide further evidence of how SL can enhance community surge capacity and contribute greatly to community disaster response. Surge capacity is the ability of a community or system to expand care capacity to meet increased health service needs in the event of a disaster (Slepski, 2005). Academic institutions are becoming increasingly active in community preparedness and response to disasters (Dunlop, Logue, Beltran, & Isakov, 2011), contributing resources, personnel and students to meet surge capacity demands. Nursing student SL has been used in many instances to enhance community-based surge capacity during public health disasters (Adams, Reams, & Canclini, 2015). Nursing student efforts described in this study resulted in a more effective earthquake disaster response through the provision of health services to disaster victims, expanding community outreach and improving volunteer management. These findings show that nursing student SL can be used to enhance surge capacity for community disaster response in Japan.

Recommendations, limitations and future steps
The following are recommendations for how to address challenges encountered and provide meaningful SL
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experiences for nursing students. Nurse educators must establish and maintain relationships with local government and community groups, public health nurses and other agencies involved in community disaster preparedness and response. This must be a continual effort because turnover of agency personnel makes it difficult to maintain connections once they have been established.

Formal student learning and community outcomes should be identified and agreed upon by nursing faculty and community members prior to the involvement of students. Results from this study report the perceived outcomes of faculty members based on student reflections, observations and discussions with community members. This may not provide a fully accurate representation of the effects that SL has on student learning and the community. By identifying formal evaluation criteria beforehand, the effect of SL on students and the community may be better evaluated and understood. Many tools already exist to measure student and community effect of SL. Such tools could be adapted to obtain feedback from faculty, students, community members and partner agency staff. This would result in a more comprehensive understanding of the effect these SL activities have on student nurses and community disaster preparedness.

This pilot study was limited by its relatively small sample size. The concept of SL is not well understood by nursing faculty in Japan. This may have influenced the number of participants. Results of this study only reflect nursing faculty members’ perceived outcomes and did not include input from students, community members or agency staff. A larger study should be conducted to better understand the student perspective of the SL experience, as well as the views of the community agency staff and service recipients. Despite these limitations, this study provides baseline knowledge about current practices regarding the use and potential effect of SL disaster nursing education in Japan. The information and data described in this study regarding student activities, successes, challenges and recommendations can be used to guide nurse educators in planning SL activity efforts related to disaster nursing education, and provide a foundation for further research on this topic.

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AUTHORS’ CONTRIBUTIONS

G. G., S. M. and K. Q. contributed to the conception and design of this study; G. G. and S. M. conducted the participant recruitment and key informant interviews; G. G. and K. Q. performed the qualitative analysis; G. G. drafted the manuscript; S. M. and K. Q. critically reviewed the manuscript and supervised the whole study process.

DISCLOSURES

The authors of this paper certify that they have no potential conflicts of interest in the subject matter or materials discussed in this manuscript.

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