Asian Journal of

HUMAN SERVICES

Printed 2013.0430 ISSN2186-3350
Published by Asian Society of Human Services

April 2013
VOL. 4

Asian Society of Human Services

ORIGINAL ARTICLE

Recognition of the Necessity of Practical Disaster Nursing Education among Nursing Teachers in Japan

Hitomi MATSUNAGA [1)], Koichi SHINCHI [1)],
Kazuyuki AKINAGA [1)], Setsuko UMEZAKI [2)]

1) Department of Community and International Health Nursing, Faculty of Medicine Saga University, 5-1-1 Nabeshima, Saga-shi, Saga-ken 849-8501, Japan.
shinchik@cc.saga-u.ac.jp Tel: +81-952-34-2564 FAX: +81-952-34-2023

2) Department of Nursing, Faculty of Health Sciences, Junshin Gakuen University

ABSTRACT

Introduction: In large-scale disasters, nurses play a critical role in prehospital care and therefore require training in disaster medicine in order to prepare for future catastrophes. Accordingly, it is imperative to examine how nursing teachers perceive the importance of disaster nursing education.

Hypothesis/Problem: The aim of this study is to investigate nursing teachers' views regarding the necessity of disaster nursing education. In particular, this study will examine perceptions regarding the importance of practical exercises in disaster training.

Methods: Study subjects included 95 nursing teachers from Saga Prefecture in Japan. Responses to a self-administered questionnaire concerning disaster nursing education were collected between July 1, 2009 and April 30, 2010 and analyzed statistically.

Result: Approximately 81% of teachers acknowledged the need for practical exercises in cultivating a student's ability to respond effectively during disasters. Teachers who participated in practical disaster nursing lectures and/or exercises recognized the necessity more so than those who had no such experience.

Conclusion: Technical education including practical exercises is critical in cultivating an expert nurse who can play an active role in large-scale disasters. Establishing appropriate disaster nursing education for inexperienced student nurses and encouraging teachers to participate in practical lectures and exercises are vital.

Received
February 14,2013

Accepted
March 24,2013

Published
April 30,2013

＜Key-words＞
disaster medicine, disaster nursing, education, practical exercise
Asian J Human Services, 2013, 4:30-39. © 2013 Asian Society of Human Services

Introduction

Japan is susceptible to natural disasters, such as typhoons, earthquakes, volcanic explosion, and other phenomena related to weather and geology.[1] The greatest disaster in recent years, the Great East Japan Earthquake struck on March 11, 2011, leaving in its aftermath approximately 20,000 people, including foreign citizens, dead or missing and a multitude of nuclear plant accidents.[2] Large-scale artificial disasters, such as the terrorist sarin gas attack on the Tokyo subway system [3] and the Amagasaki rail crash,[4] have also contributed to the calamity of natural disasters. Monumental catastrophic events such as these require urgent medical attention and the support of nursing personnel. Thus, training specialists who can respond competently to disaster situations is an important mission in Japan. Since nurses comprise a large proportion of the prehospital and disaster medicine workforce, providing adequate nursing education is essential. Yet, recent studies indicate that nurses remain unprepared to respond to a high-impact event [5, 6]. In most countries, disaster training is seldom provided at the basic nursing education leve1 [7, 8] and research related to disaster nursing is rarely conducted. Given the proclivity for both natural and artificial large-scale disasters in Japan, establishing educational programs for disaster nursing and promoting research in this area are important goals. The Japanese Government recommends disaster training at the basic nursing education level but entrusts most of the curricula to the discretion of nursing teachers [9]. Many nursing students are interested in practical nursing such as psychological care for disaster victims and triage.[10] Practical education with exercises has been reported to be an effective and requisite component of basic nursing education [11]. In conducting these exercises, however, it is critical to engage the participation of experts who are technically skilled and knowledgeable in disaster nursing. Very few studies have investigated teaching in the field of disaster nursing or have determined which topics teachers consider necessary subjects for education. This study was undertaken to identify the topics that nursing teachers deem to be important in disaster nursing education. In particular, this study examined the attitudes regarding the value of practical exercises and analyzed the potential factors affecting these attitudes.

Methods

Study Design and Participants

This cross-sectional study analyzed both qualitative and quantitative data collected via a

self-administered questionnaire during the period from July 2009 to April 2010. The subjects included 158 nursing teachers from the eight schools located in the Saga Prefecture of Japan, which has a population of 866,000 and an area of 2,439 square kilometers. The participating schools and teachers from each school were randomly selected. A letter of request and questionnaire for each study participant were delivered directly to the nursing schools and returned by postal mail. The overall response rate was 60.8% with 96 teachers returning the questionnaires. One person was excluded due to numerous omitted responses. Based on the remaining 95 teachers, we analyzed the data. The valid response rate was 99.0%. Informed consent was obtained and all participants were informed that they could refuse to participate or withdraw from the study at any time.

Questionnaire

The questionnaire included both quantitative and qualitative items. Teachers ranked the level of necessity for practical exercises and items categorized as Contents Emphasized in Disaster Nursing Education using an ordinal five-point scale ranging from 1(Absolutely unnecessary) to 5 (Absolutely necessary). The Contents Emphasized in Disaster Nursing Education included 11 items (Table 1). In addition, data regarding age, sex, years of experience as a nurse and teacher, clinical experience in a medical department, participation in lectures or exercises in disaster nursing, experience in disasters and disaster nursing activities, and plans to teach disaster nursing were collected. The qualitative questions investigated reasons why practical exercises are necessary or unnecessary for basic nursing education.

Data Analysis

Descriptive statistics were employed to summarize the data on the contents emphasized in disaster nursing education. The five levels of necessity for practical exercises were divided into two groups, which were broadly categorized as “Necessary,” which included “Absolutely Necessary” and “Necessary” responses, and “Unnecessary,” which included “Absolutely Unnecessary,” “Unnecessary,” and “Neutral” responses. The Mann-Whitney U test was used to compare the baseline characteristics between groups. Subject were divided into two groups according to the median values for baselines attributes, including age, years of teaching experience and years of experience as a nurse. Statistical analyses were performed using PASW Statistics 18 (IBM SPSS, Armonk, NY) software with the level of statistical significance defined as $P<0.05$.

Content analysis was employed to examine the qualitative data.[12-14] Three reviewers, two disaster nursing researchers and a professor of basic nursing education independently coded the data. Discrepancies were reconciled through line-by-line review of the coded material until a consensus was reached. Main-coding categories emerged that identified reasons why practical exercises are necessary or unnecessary for basic nursing education. Subcategories were further created for each of the main-coding categories.

Table 1 The Contents Emphasized in Disaster Nursing Education

Educational Contents	Details of contents
Knowledge of disaster nursing: 7items	
Basic knowledge	definition of disaster nursing, characteristics of different types of disasters, and principles of triage
Stage of disaster life cycle and nursing	disaster life cycle and nursing activities, as well as nursing in first-aid stations and temporary housing
Psychological care	care for acute and chronic stress disorders in victims of disasters and the people who support them
Nursing activities in hospitals	evacuation guidance, system for accommodating patients during disasters, and institutional nursing during disasters
Laws and systems for disaster support	disaster countermeasures basic act and cooperation with governmental administration
Disaster network	building support and cooperation among various professionals and relevant organizations
Nursing in disaster areas	visualization of nursing , using visual materials as teaching aids and stories of experience in disaster nursing activities
Skills of disaster nursing: 4 items	
Nursing skills	physical assessment and first-aid treatment including pressure homeostasis, bandaging, and bone fracture fixation
Medical skills	handling of triage tags, medical assistance, and cardiopulmonary resuscitation (CPR)
Skills for disaster support	tent set-up, creation and operation of stretchers, preparation of first-aid station environment
Disaster preparedness and training	exercises and creation of a disaster preparedness manual

Contents Emphasized in Disaster Nursing Education was evaluated using five-point scale.

1: Absolutely unnecessary, 2: Unnecessary, 3: Neutral , 4: Necessary, 5: Absolutely necessary

Results

Baseline Attributes of Subjects

Women accounted for 90.5% of the subjects (Table 2). The mean age (±SD) of the subjects was 43.7±7.0 years (range, 29-60 years). On average, the subjects presented with 9.6±5.7 years of nursing and 7.5±5.7 years of teaching experience. Nineteen subjects (20.0%) had lectured, 29 subjects (30.5%) had disaster nursing education, and ten subjects (10.5%)

had experience with disaster skill training. Nine subjects (9.5%) had experienced disasters, and seven subjects (7.4%) had participated in disaster support activities.

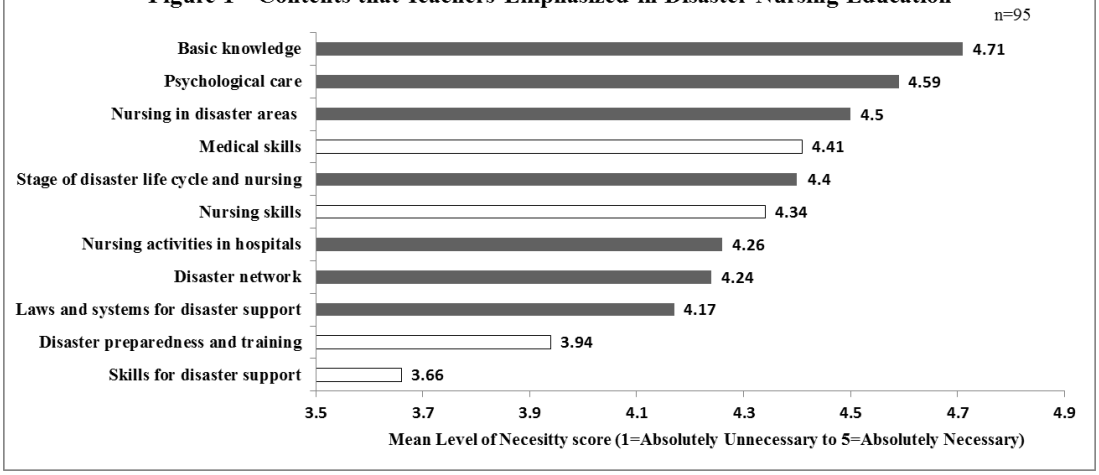
Table 2 Baseline attributes of subject n=95

Items		Mean±SD	n	%
Age		43.7±7.0		
Sex	Male		9	9.5
	Female		86	90.5
Years of experience as a nurse		9.6±5.7		
Years of experience as a teacher		7.5±5.7		
Clinical experience in the medical department				
Internal medicine department			55	57.9
Surgery department			54	56.8
Emergency department			23	24.2
Experience in participation in lectures or exercises in disaster nursing				
Lecture method			19	20.0
Nursing education			29	30.5
Skill training			10	10.5
Experience in disasters			9	9.5
Experience in disaster nursing activities			7	7.4
Planning to teach disaster nursing			31	32.6

Contents Emphasized in Disaster Nursing Education

Knowledge-related items were ranked more highly compared to skill-related items (Figure 1). Teachers placed the greatest emphasis on "basic knowledge," followed by "psychological care," and "nursing in disaster areas." Regarding skills, "medical skills" tended to be stressed more than "nursing skills". Teaching "skills for disaster support" was considered to be the least necessary.

Figure 1 Contents that Teachers Emphasized in Disaster Nursing Education



Level of Necessity of Practice Exercises

Practical exercises were considered to be "Absolutely Necessary" by 30 (31.6%) respondents, "Necessary" by 47 (49.5%), "Neutral" by 10 (10.5%), and "Unnecessary" by 5 (5.3%). None of the subjects deemed practice exercises to be "Absolutely Unnecessary." Three (3.1%) subjects did not provide responses. The majority (81.1%) of subjects recognized the need for including practical exercises for disaster nursing in basic nursing education. This recognition was significantly affected by skill training (P=0.005) and nursing education (P=0.024). Teachers who had participated in disaster nursing lectures and exercises placed significantly greater emphasis on the necessity of practical exercises than teachers without such experience (Table 3).

Table 3 Affecting Factors that Enables Teachers to Recognize the Necessity of Practical Exercises n=92

	Necessity of practical exercises score				p-value*
	Yes		No		
	n	Mean±SD	n	Mean±SD	
Experience in participation in lectures or exercises	46	4.38±0.61	46	3.82±0.89	0.001
Experience in skill training	10	4.70±0.68	82	4.04±0.79	0.005
Experience in nursing education	28	4.41±0.50	64	3.97±0.89	0.024

*Mann-Whitney U test: statistically significant

Reasons Why Practical Exercises are Necessary

Table 4 shows the reasons why practical exercise is necessary. In the content analysis, five main-coding categories were identified: 1) Practical Competence during Disasters, 2) Enhancement of Thinking, 3) Special Characteristics of Disaster Nursing, 4) Effectiveness of Teaching Format, and 5) Other. These five categories were further divided into 18 subcategories.

Practical Competence during Disasters

Responses to the questionnaire item on practical competence during disasters revealed that teachers wanted students not only to gain knowledge but also to acquire the practical ability to assume an active role in disaster nursing education. In addition, teachers desired that students obtain experience in disaster nursing through practical exercises.

Enhancement of Thinking

A second rationale supporting the necessity of practical exercises was to improve intellectual abilities, such as problem-solving and the knowledge and understanding of disaster nursing. The teachers believed that the intellectual capacity to respond to disasters might be further developed through practical exercises.

Table 4 Reasons Why Practical Exercises are Necessary for Teachers

(n=64: Numbers of effective response teachers)

Items	total number of responses (%)	Codes	Nimber of responses
Practical competence during disasters	32 (40.5%)	Acquisition of practical ability and the ability to take action	20
		Insufficiency of knowledge alone	8
		Experience in practicing nursing during disasters	4
Enhancement of thinking	26 (32.9%)	Ability to visualize	12
		Improvement of problem-solving ability	6
		Ability to understand	4
		Memorability	2
		Understanding of the importance of knowledge and skills	1
		Integration of knowledge and skills	1
Special characteristics of disaster nursing	10 (12.7%)	Applied nursing skills	6
		Urgency	2
		Limited medical resources	2
Effectiveness of teaching format	8 (10.1%)	Improvement of learning effectiveness	5
		Increase in confidence	2
		Effect on students	1
Other	3 (3.8%)	Formation of lesson specifics	1
		Possibility of no education in clinical settings	1
		Needs of students	1
Content analysis	79 (100%)	Total numbers of described contents	79

*Many teachers described several reasons.

Special Characteristics of Disaster Nursing

Respondents also acknowledged that disaster nursing is a specialized field and recognized the need for practical exercises in applying nursing skills under extraordinary circumstances where medical resources may be limited.

Effectiveness of Teaching Format

Participants expressed the desire for students to further develop and improve their good judgment, values, attitudes, and interest in disaster nursing through practical exercises. Some respondents thought students could benefit from practical exercises.

Other

Three reasons necessitating practical exercises that were not included in other categories were; 1) to address the needs of students; 2) to facilitate the development of lesson specifics; and 3) to compensate for the unlikelihood of acquiring disaster education in clinical settings.

Reasons Why Practical Exercises are Unnecessary

In the content analysis, the reasons for not supporting the need for using practical exercises were grouped into two main-coding categories: 1) Educational Values of Teachers and 2) Unprepared Educational Environment. These two categories were further divided into six subcategories.

Educational Values of Teachers

Responses in this category conveyed the opinion that the practical exercise of disaster nursing was unnecessary and projected a sense of adequacy gained from skills acquired through continuing education. Further, teachers believed that education regarding basic nursing skills other than disaster nursing should be reinforced. While the respondents thought that disaster nursing education extended beyond solely gaining knowledge, they were also satisfied with the acquisition of “book knowledge".

Unprepared Educational Environment

According to the respondents, balancing a curriculum with the existing nursing education was difficult, and a method for accomplishing this had not yet been established within the current educational system. Further, due to the overlap with other nursing activities, such as administering emergency care, there were insufficient hours to participate in disaster nursing training or practice exercises.

Discussion

The aim of this study, the first of its kind in Japan, was to explore the perception about the necessity of disaster education among nursing teachers. Many previous studies have demonstrated the importance and effectiveness of the practical exercise of disaster nursing.[15, 16] Similarly, nursing teachers in this study considered practical exercise essential and recognized its utility in developing various areas, such as “skills” through the acquisition of practical competency and the ability to take action, “knowledge” through visualization and understanding, and “emotional aspects” by increasing confidence. These findings show that nursing teachers are highly motivated and interested in disaster nursing.

Particularly, participation in “skill training” and “nursing education” signified the recognition for the need for practical exercises. However, teachers in this study had little

experience in "skill training" and "disaster nursing education," and seldom engaged in disaster nursing activities. Encouraging teachers to participate in practical disaster nursing lectures and exercises may assist in solidifying the foundation for disaster nursing education. Previous study reported that in the workplace, the family's attention in participating in disaster support activities influenced disaster nursing participation.[17] Future studies might aim to enhance technical education support for disaster nursing teachers and to provide social support in ensuring safety during disaster nursing tasks. Furthermore, developing a curriculum and effective teaching methods for teachers without practical experience in disaster nursing is required. The findings of this study also suggested that experience in disaster nursing fostered recognition of the need for practical exercises and the importance of providing scenarios in which disaster nursing skills may be applied. Although nursing instructors appeared to emphasize teaching disaster nursing "knowledge" rather than "skills," this may reflect the general belief that basic nursing education requires a solid foundation of knowledge .[18]

Few study limitations are noted. This study was the relatively small sample size and the subjects were only Japanese nursing teachers, especially in Saga Prefecture. Furthermore, teachers in this study had little experience in "skill training" and "disaster nursing education," and seldom engaged in disaster nursing activities. This study investigated Japanese nursing teachers' education programs and teaching priorities. Once disaster happens, many nurses will be called to practice. Future efforts should aim to establish disaster nursing education in different countries worldwide and to actively engage the participation of disaster specialists in basic nursing education.

Conclusion

Many nursing teachers were interested in disaster nursing education and recognized the necessity of practical exercises for disaster nursing in basic nursing education. Technical education including practical exercises is critical in cultivating an expert nurse who can play an active role in large-scale disasters. Establishing appropriate disaster nursing education for inexperienced student nurses and encouraging teachers to participate in practical lectures and exercises are vital.

References

1) The Geospatial Information Authority of Japan (GSI): Disaster Measures, Available at http://www.gsi.go.jp/ENGLISH/page_e30066.html, Accessed 16 June 2012.
2) The Great East Japan Earthquake Information from Official Websites, Available at http://www.jst.go.jp/pr/pdf/great_east_japan_earthquake.pdf, Accessed 16 June 2012.

3) Tetsu O., Norifumi N., Muneo O. (2003), The Chemical Disaster Response System in Japan, Prehosp Disaster Med, 18(3), 189-192.
4) Takashi N., Stephanie N. Rosborough, Michael J. VanRooyen, et al (2006), Express Railway Disaster in Amagasaki: A Review of Urban Disaster Response Capacity in Japan, Prehosp Disaster Med, 21(5), 345-352.
5) Wisniewski R., Dennik-Champion G., Pelier JW. (2004), Emergency Preparedness competencies, J Nurs Adm , 54(10), 475-480.
6) Kalz A.R., Nekorchuk D.M., Holck P.S., et al (2006), Hawaii physician and nurse bioterrorism preparedness survey, Prehosp Disaster Med, 21(6), 404-413.
7) Weiner E (2006), Preparing Nurses Internationally for Emergency Planning and Response, Online J Issues Nurs, 11(3). Available at http://nursingworld.org/ MainMenuCate-gories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume112006/No3Sept06/PreparingNurses.html. Accessed 16 June 2012.
8) Aiko Y. (2008), Education and Research on Disaster Nursing in Japan, Prehosp Disaster Med, 23(1),s6-s7.
9) Kiyomi H. (2008), Envelopment a disaster nursing educational program based on the experiential learning theory, J Jap Soc Disast Nurs, 9, 10-23.
10) Mariko O. (2000), The learning Needs of Students for Disaster Relief Theory in Basic Nursing Education, J Jap Soc Disast Nurs, 2, 17-27.
11) Marguerite T., Littleton-Kearney, Lynn A.Slepsk (2008), Directions for Disaster Nursing Education in the United States, Crit Care Nurs Clin N Am, 20,103-109.
12) Berelson B. (1971), *Content Analysis in Communication Research*, GlencoeⅢ.New York, The Free Press, 4-220.
13) Satu Elo, Helvi Kyngäs (2007), The qualitative content analysis process, J Adv Nurs, 62(1), 107-115.
14) Krippendorff K. (1980), Content Analysis An Introduction to its Methodology, Newbury Park, Saga Publications.
15) Andrea Jennings-sanders (2004), Teaching Disaster Nursing by utilizing the Jennings Disaster Nursing Management Model, Nurs Edu in Practice, 4,69-76.
16) Decker S.I., Galvan T.J., Sridaromont K. (2005), Integrating an exercise on mass casualty response into the curriculum. J Nurs Educ, 44(7), 339-40.
17) Satoko M., Kazutoshi K., Taro S. (2003), Nursing in Sudden-Onset Disasters, Prehosp Disaster Med, 18(4),359-366.
18) Gerard J. FitzGerald, Peter Aitken, Paul Arbon,et al (2010), A National Framework for Disaster Health Education in Australia, Prehosp Disaster Med, 25(1),4-11.

Asian Journal of Human Services
VOL.4 April 2013

CONTENTS

ORIGINAL ARTICLES

REVIEW ARTICLES

SHORT REPORT

ACTIVITY REPORT

Printed by
Asian Society of Human Services
Okinawa, Japan