Training Suggestions for Japanese Head Nurses with Inaccurate Understanding of their Roles and Responsibilities in Initial Phases of Disaster Incidents

Yukari Sugawara¹,², Chieri Yamada³

¹Graduate student, Graduate School of Medicine, Fukushima Medical University. 1 Hikarigaoka, Fukushima City, Fukushima, Japan. ²National Hospital Organization Sendai Medical Center Sendai School of Nursing and Midwifery. 2-8-8 Miyagino, Miyagino-ku, Sendai City, Miyagi, Japan, ³Professor (Retired), PhD, Graduate School of Medicine, Fukushima Medical University. 1 Hikarigaoka, Fukushima City, Fukushima, Japan.

How to cite this article: Yukari Sugawara, Chieri Yamada. Training Suggestions for Japanese Head Nurses with Inaccurate Understanding of their Roles and Responsibilities in Initial Phases of Disaster Incidents. International Journal of Nursing Education, July-September 2023;15(3).

Abstract

Background: During large-scale disasters, hospitals must respond immediately. In such situations, different levels of nurses have different roles and responsibilities. Head nurses in Japan have two types of responsibilities based on the shift, day or night. Assuming that head nurses do not clearly recognize these differences due to their lack of appropriate institutional education, this study aimed to clarify actual conditions of institutional education and head nurses' level of understanding.

Methods: Three questionnaires were developed: one for nursing directors regarding departments' implementation based on the disaster response manual and two true/false questionnaires for head nurses regarding their recognition of roles and responsibilities in disaster response. Twenty hospitals in a national hospital organization in Japan, located in two regions, were studied.

Conclusion: Of the 17 hospitals that responded, 52.2%–35.3% had written roles, responsibilities, and action procedures for head nurses on the day and/or night shift. Education, including orientation and training, was provided for the two shifts in 35.3%–23.5% of the hospitals. In terms of the true/false questions, 154 head nurses from both shifts responded with high accuracy; however, they did not appear to understand that they were commanders of the ward on the day shift and of the hospital on the night shift. The results indicate the need to stipulate head nurses' roles, responsibilities, and action procedures in the disaster response manual and implement institutional education and the provision of action assistant tools.

Keywords: initial disaster response, head nurse, roles, recognition, training

Introduction

Hospitals in Japan developed disaster response manuals (DRMs) after the Great Hanshin-Awaji Earthquake in 1997; however, many issues related to DRM inefficiency became clear when a larger earthquake occurred in 2011. All workers should
receive institutional education to know and understand what they should do during a disaster. Hospital nursing departments should have clearly written roles and responsibilities for nurses in their DRMs.

The researchers examined head nurses who were mid-level managers with different roles and responsibilities for the day shift versus the night shift. During the day shift, on weekdays, they managed all nursing services for their own wards. On the weekends and holidays, head nurses assigned to both the day and night shifts were expected to manage the nursing services of the entire hospital. Neoi reported that 89.7% of 130 hospitals in the central region, including Tokyo Metropolitan, had mid-level nursing managers, including head nurses and nurse leaders, on the night shift; 79.5% of them worked two to three night shifts a month, and 85.3% of night shift nurse managers were responsible for managing the whole nursing department. When disasters occur, head nurses have to take immediate actions depending on the shift. Although no scientific report has examined the issue, the researchers observed that head nurses’ recognition of the two different roles and responsibilities seemed insufficient.

Regarding Japan’s shift systems, a survey by the Japan Federation of Medical Workers’ Union reported that 38.7% of 148 institutions had three shifts and 23.0% had two shifts; furthermore, 0.8% of the nurses were night shift exclusive. For head nurses newly assigned to the night shift, Neoi found that 11.1% completed an established training program while the others learned by shadowing senior head nurses or studying DRM or action procedures on their own. Al Harthi et al. found that poor informal education contributed to nurses’ difficulties in managing disasters.

Therefore, this research analyzed how head nurses understood their two types of roles and responsibilities and made some suggestions for training development based on the findings.

**Method**

Target population: The research focused on 217 head nurses working in 20 hospitals of a national hospital organization in two regions, including two ECHs in the regions, that had experienced large-scale natural disasters since 2011.

Period and venue: From June 17 through July 10, 2020. Fukushima Medical University, Japan.

Questionnaire: Three anonymous questionnaires were administered. One questionnaire for nursing directors and two questionnaires for head nurses were developed and sent to the nursing directors of the 20 hospitals for distribution to head nurses. Respondents returned the questionnaires to the researchers using a postage-paid return envelope to ensure that the researchers had no access to the senders’ personal information.

**Questionnaire development:** The first questionnaire was prepared to collect information from nursing directors about their hospital’s disaster response preparedness, including the presence of a DRM, written roles and action procedures for head nurses on the day/night shifts in the DRM, institutional orientation and training, and assistance tools (e.g., action card, emergency communication tools, and flow chart) to instruct action procedure. The remaining two questionnaires included true/false questions to measure head nurses’ knowledge of their different roles and responsibilities on day and night shifts. As there was no applicable scale or questionnaire, the researchers relied on published information regarding hospitals’ business continuity plan (BCP) manuals, BCP headquarter manuals, and action card disaster management when developing the questionnaires. Savage explained that “an action card incorporates written information, advice, and orders for members of the hospital’s staff”. Four of the seven principles advocated by Major Incident Medical Management and Support were also considered as applicable in the initial phases of disaster response.

The researchers assumed that some mistakes would be made during a disaster. For example, head nurses could be uncertain of the hospital or ward command lines, commanders may act improperly based on responsibilities, and their strong tendency to act independently instead of being commanders. Therefore, to determine whether the head nurses understood and choose the right answers in challenging situations during the initial phases of
disaster response, the researchers developed the following five units each for day shift and night shift questions:

a) Day shift questionnaire

- After head nurses secure their own safety, where they should be (see Tables 2, A2, A3, and A4)
- Who should confirm patients’ and staff’s safety (see Tables 2, A5, and A6)
- Where they should take nurse leaders’ reports (see Tables 2, A7, and A8)
- Who issues the order to evacuate (see Tables 2, A12, and A13)
- When an evacuation is called for, who should guide patients to evacuate (see Tables 2, A13, and A14)

b) Night shift questionnaire

- After securing their own safety, where they should be (see Tables 3, B2, and B3)
- Where and how they should confirm wards’ situations (see Tables 3, B4, B5, and B6)
- Where they should be when taking reports from nurse leaders (see Tables 3, B7, and B8)
- After the tentative DRH calls for an evacuation, how they should instruct nurse leaders (see Tables 3, B13, B14, and B15)
- How they should allocate nurses who voluntarily arrive at hospitals (see Tables 3, B16, and B17)

The researchers also collected data on five factors that might affect respondents’ scores: length of time working as a head nurse, ECH work experience, number of disasters experienced on day and night shifts, institutional education experience on day and night shifts, and institutional training experience on day and night shifts.

Data analysis: Microsoft 365 Excel, version 2010 (Washington, USA) was used for the simple calculations of numbers and percentages from the data. For some statistical analyses, SPSS Statistics for Windows, version 26.0 (IBM Corp., NY, USA) was used. To test normal distribution, the Kolmogorov-Smirnov test was used. To determine the accuracy rates for the day shift and night shift questionnaires, the researchers divided responses into two groups, high score and low score, based on mean and median scores. To analyze the relationship among the five factors affecting scores, multiple regression analysis and Mann-Whitney’s U-test were applied. For all tests, a p-value less than .05 was applied.

Results

I. Directors

Seventeen of the 20 directors returned the questionnaire (valid response rate: 85.0%); one was the ECH. Table 1 shows how many of them had DRM issues.

### Table 1. Hospitals’ status of DRM item implementation (n=17)

<table>
<thead>
<tr>
<th></th>
<th>Written roles in DRM</th>
<th>Written action procedure in DRM</th>
<th>Institutional orientation</th>
<th>Institutional training</th>
<th>Assistant tools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day</td>
<td>Night</td>
<td>Day</td>
<td>Night</td>
<td>Day</td>
</tr>
<tr>
<td>1</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Total: n (%)</td>
<td>5 (83.3)</td>
<td>5 (83.3)</td>
<td>4 (66.7)</td>
<td>3 (50.0)</td>
<td>2 (33.3)</td>
</tr>
</tbody>
</table>
II. Head nurses

1. General information

Of the 217 head nurses, 154 returned the questionnaires. All were accepted for the analysis, although a few questionnaires were missing a few answers (valid response rate: 70.9%). The median length of working as head nurse was 5.25 years; the range was 0.17–35.25 years. Forty-eight head nurses (31.2%) had worked or were working in the ECH. Twenty-six (16.9%) out of 154 had experienced a disaster on day duty and nine (5.8%) had done so on night duty.

2. Day shift accuracy rates for 18 true/false questions

Table 2 presents the 18 questions and accuracy rates. For individual scores, the median and range were 77.8% and 26%–100%, respectively. Seventy-seven nurses (50%) scored under the median value.

<table>
<thead>
<tr>
<th>Questions</th>
<th>“Yes” was correct: *</th>
<th>Accuracy rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 I secure my own safety</td>
<td>*</td>
<td>97.4</td>
</tr>
<tr>
<td>A2 I go to the disaster response head quarters after I secure my safety</td>
<td></td>
<td>35.1</td>
</tr>
<tr>
<td>A3 I go to the director’s office of the nursing department after I secure my safety</td>
<td></td>
<td>72.1</td>
</tr>
<tr>
<td>A4 I go to my ward when I am out of my ward after I secure my safety</td>
<td>*</td>
<td>99.4</td>
</tr>
<tr>
<td>A5 I instruct nurse leaders to check the safety of the whole ward</td>
<td>*</td>
<td>100</td>
</tr>
<tr>
<td>A6 I check the safety of the whole ward myself</td>
<td></td>
<td>51.9</td>
</tr>
<tr>
<td>A7 I stay at the director’s office while receiving reports from the nurse leaders</td>
<td></td>
<td>92.8</td>
</tr>
<tr>
<td>A8 I stay at the ward while receiving reports from the nurse leaders</td>
<td>*</td>
<td>88.3</td>
</tr>
<tr>
<td>A9 I collect information on other wards’ conditions</td>
<td></td>
<td>26.0</td>
</tr>
<tr>
<td>A10 I call my staff who are not on duty and check their safety</td>
<td></td>
<td>39.0</td>
</tr>
<tr>
<td>A11 I call the director’s office using an internal phone or emergency communication tool (such as transceiver) for reporting my ward’s condition</td>
<td>*</td>
<td>97.4</td>
</tr>
<tr>
<td>A12 After I call the director’s office, I instruct the nurse leaders to guide all patients in evacuating the hospital</td>
<td></td>
<td>63.8</td>
</tr>
<tr>
<td>A13 After headquarters issues an evacuation order, I instruct the nurse leaders to guide all patients in evacuating</td>
<td>*</td>
<td>96.8</td>
</tr>
<tr>
<td>A14 After headquarters issues an evacuation order, I guide all patients with nurse leaders in evacuating</td>
<td></td>
<td>32.5</td>
</tr>
<tr>
<td>A15 According to the headquarters’ decision, I reallocate nurses and duties in the ward and notify the nurse leaders of the reallocations</td>
<td>*</td>
<td>96.1</td>
</tr>
</tbody>
</table>

---

Table 2. Accuracy rates for 18 true/false questions related to head nurse’s roles and responsibilities on day shift when disasters occur (n=154)
3. Day shift accuracy rates between correct answers and complete correct answers

As described in the method section, day shift questions included five units. Table 3 summarizes the relationship of accuracy rates between the correct answers and the complete correct answers for each unit.

**Table 3. Accuracy rates between correct answers and complete correct answers per unit on day shift**

<table>
<thead>
<tr>
<th>Category</th>
<th>Place to stay or go when disaster occurs</th>
<th>Who confirms safety of ward</th>
<th>Place to receive reports from nurse leaders</th>
<th>Who has authority to make evacuation decisions</th>
<th>Head nurse’s role when evacuation starts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>A2*, A3, A4</td>
<td>A5*, A6</td>
<td>A7, A8*</td>
<td>A12, A13*</td>
<td>A13*, A14</td>
</tr>
<tr>
<td>Accuracy rate</td>
<td>99.4%</td>
<td>100%</td>
<td>88.3%</td>
<td>96.8%</td>
<td>96.8%</td>
</tr>
<tr>
<td>Complete accuracy rate</td>
<td>32.5%</td>
<td>51.9%</td>
<td>83.1%</td>
<td>62.3%</td>
<td>30.5%</td>
</tr>
</tbody>
</table>

*: question for which “yes” was correct answer

4. Night shift accuracy rates for 18 true/false questions

Table 4 presents the 20 questions and percentages of correct answers. The mean and standard deviation of individual scores were 76.6 % and 21.6 %, respectively. Sixty-three respondents (40.9%) scored under the mean value.

**Table 4. Accuracy rates for 20 true/false questions related to head nurse’s roles and responsibilities on night shift when disasters occur (n=154)**

<table>
<thead>
<tr>
<th>Questions</th>
<th>“Yes” was correct: *</th>
<th>Correction rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1 I secure my own safety</td>
<td>*</td>
<td>98.7</td>
</tr>
<tr>
<td>B2 I go to the tentative disaster response headquarters after I secure my safety</td>
<td>*</td>
<td>75.3</td>
</tr>
<tr>
<td>B3 I go to all wards after I secure my safety</td>
<td></td>
<td>42.2</td>
</tr>
<tr>
<td>B4 I call nurse leaders of all wards using an internal phone or emergency communication tool (such as transceiver) and instruct them to check all wards</td>
<td>*</td>
<td>90.9</td>
</tr>
<tr>
<td>B5 I go to all wards and instruct nurse leaders to check their wards</td>
<td></td>
<td>50.0</td>
</tr>
<tr>
<td>B6 I go to all wards and check them myself</td>
<td></td>
<td>79.9</td>
</tr>
<tr>
<td>B7 I stay at the tentative headquarters and receive reports from nurse leaders</td>
<td>*</td>
<td>79.9</td>
</tr>
<tr>
<td>B8 I go to all wards and receive reports from nurse leaders</td>
<td></td>
<td>57.1</td>
</tr>
<tr>
<td>B9 I collect information about the whole hospital’s condition</td>
<td>*</td>
<td>99.4</td>
</tr>
<tr>
<td>B10 I collect information on community and area conditions</td>
<td>*</td>
<td>86.4</td>
</tr>
<tr>
<td>B11 I report the condition of the nursing department to the director of the tentative headquarters</td>
<td>*</td>
<td>98.1</td>
</tr>
</tbody>
</table>
5. Night shift accuracy rates between correct answers and complete correct answers.

Table 5 presents the relationship of accuracy rates between correct answers and complete correct answers.

Table 5. Accuracy rates between correct answers and complete correct answers per unit on night shift

<table>
<thead>
<tr>
<th>Category</th>
<th>Place to stay or go when disaster occurs</th>
<th>Who confirms safety of wards</th>
<th>Receiving reports from nurse leaders or go to wards directly</th>
<th>Who has authority to make evacuation decisions</th>
<th>Allocation of assembled nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>B2*, B3</td>
<td>B4*, B5, B6</td>
<td>B7*, B8</td>
<td>B13*, B14</td>
<td>B16*, B17</td>
</tr>
<tr>
<td>Accuracy rate</td>
<td>75.3%</td>
<td>90.9%</td>
<td>79.9%</td>
<td>95.5%</td>
<td>94.2%</td>
</tr>
<tr>
<td>Complete accuracy rate</td>
<td>37.7%</td>
<td>40.9%</td>
<td>54.5%</td>
<td>33.8%</td>
<td>33.8%</td>
</tr>
</tbody>
</table>

*: question for that “yes” was correct answer

6. Education experience and relationship to scores

6.1 Education experience

Table 6. Institutional education experience of head nurses  (n=154)

<table>
<thead>
<tr>
<th>Institutional orientation</th>
<th>Day shift</th>
<th>Night Shift</th>
<th>Institutional training</th>
<th>Day shift</th>
<th>Night Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day shift 29 (18.8%)</td>
<td>48 (31.2%)</td>
<td>21 (13.6%)</td>
<td>Contents: Establishing tentative DRH, coordination of off duty nurses who voluntarily gather, patient referral, damage assessment, reporting system</td>
<td>13 (8.4%)</td>
<td>Contents: Disaster response, triage</td>
</tr>
</tbody>
</table>
6.2 Correlation analysis of the scores and five factors

Five factors—length of time working as a head nurse, ECH work experience, institutional education experience on day and night shifts, institutional training experience on day and night shifts, an number of disasters experienced on day and night shifts—were applied to observe correlations with questionnaire scores using multiple regression.

Collinearity was found between a) length of working and times of training, b) times of working in ECH and number of disasters experienced, c) number of disasters experienced and times of institutional training, and d) times of institutional training and institutional exercise. Each collinearity pair was deleted, and the negative correlation between the score and the length of working on the day shift was statistically significant (B=-0.20, p<0.032). The remaining analyses of the scores and five factors on the night shift, high score group, and low score group showed no significant correlation.

Discussion

To enable hospital nurses to respond appropriately to disasters, the director’s office should implement several steps. First, the roles and responsibilities of nurses at all levels should be stipulated. The contents should be disseminated to different levels of nurses separately via training to ensure that they clearly understand. Finally, helping tools should be provided.

All of the studied hospitals had DRMs; however, half had insufficiently written roles for both day and night shifts. Moreover, it was problematic that action procedures were written for fewer than half the hospitals.

Institutional education, including orientation and training, was also poorly performed. Only 11.8% of hospitals implemented orientation for head nurses on both shifts, and training was provided to 23.5% of day shift head nurses versus 17.6% of night shift head nurses. Although this research did not study the form or quality of the orientation and training, this finding is similar to Neoi’s report that head nurses learn their roles and responsibilities mostly by shadowing and self-study. Such a situation might lead to uncertainty about the target lessons.

Training that mimics actual disaster incidents is imperative for enhancing trainees’ understanding gleaned from classrooms and increasing their confidence to perform during disasters effectively. Labrugue et al. reported that previous disaster experience and disaster-related training enhanced disaster response. Smith and Farra concluded the need to provide training for nurses to obtain competencies and readiness to respond to disasters. Jonson et al. applied three short computer-based stimulation exercises involving initial disaster management and found that head nurses increased their self-efficacy and management skills. Gilmartin et al. reported that self-confidence is core to clinical nurse leaders’ successful job performance.

Three of the 17 hospitals studied provided an assistant tool, such as action cards or flow charts, to both the day shift and night shift. Disasters are unpredictable, and it is human nature to not remember everything, especially during situations involving panic. Thus, tools such as action cards and flow charts should be written using simple language describing what people “should do” in sequence would be very useful.

Recognizing head nurses’ uncertainty about their roles and responsibilities seemed to reflect the hospitals’ identified DRM-related issues. Many did not understand different roles and responsibilities on the day and night shifts; this phenomenon was more apparent on the night shift. Some unit’s respondents chose a correct answer and simultaneously provided an affirmative answer for other choices. This might suggest that their performance cannot be predicted, and such acts might cause confusion in wards or hospitals.

The responses suggested that the majority of respondents did not recognize that, when a large-scale incident occurs, they become the “control tower” and “commander” of their wards on the day shift and of the department of nursing on the night shift. Staff nurses know where the “control tower” is, and the “commander” should be there to make decisions and issue instructions according to available information. On the day shift, the head nurse is “commander” of the ward. They stay at the nursing station and instruct nurse leaders to check on patients’ and nursing staff’s safety and damages. They do not make evacuation decisions, which is the responsibility of the director of nursing. Including evacuation, head nurses instruct nurse leaders what to do and not to take action by themselves; instead, they should monitor their staff’s actions. When making decisions and instructing staff on the night shift as the director’s representative, the
“commander” head nurses gather information about the damages inside and outside the hospital and send nurses who voluntarily arrive at the hospital to where resources are scarce. Head nurses hand over authorization and report to the directors when they arrive. Thus, a firm understanding and achievement of required roles and responsibilities might be fundamental to effective responses.

Based on the findings, the researchers make some suggestions for hospital nursing departments. Written roles and responsibilities and action procedures, well-grounded training using actual scenarios for practice, and low-cost action assistant tools should be provided. As training can be challenging to develop, a common module could be developed especially as the studied group was from the same organization. A computerized module could also be considered. Each hospital could modify the module to the specific conditions of each hospital and could be expanded for any other hospital in Japan. Finally, for written action procedures and trainings, trainers should teach head nurses not only what they should do, but also what they should not do in order to eliminate action uncertainty and enhance their self-confidence.

Conclusion

Nursing departments play important roles for both patients and fellow nurses. Therefore, directors and head nurses should have concise knowledge about how to react when they are commanders of the hospital or ward. The studied hospitals in this research had some trainings, exercises, and assistant tools for head nurses, but they were not sufficient. It is necessary to establish and implement institutional education as the majority of hospitals studied had not yet renewed their DRMs with BCP.

Source of funding: Graduate School Fund of Fukushima Medical University.

References


2. Japan Federation of Medical Worker’s Union. 2022 nendoyakinjittaiyousa. [Internet] [cited 2023 Apr 20] [Actual condition survey of night shift among nurses in 2022]. Available from: http://irouren.or.jp/research/045484dd42d08899c4579e493356c5fedfd09744.pdf No English available


