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## **EDUCATION ON DISASTER PREPAREDNESS AND RESPONSE OF DENTAL HYGIENISTS IN VOCATIONAL UNIVERSITIES/COLLEGES IN JAPAN**

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## **Abstract**

*Due to the increasing global frequency of disasters, disaster preparedness training is becoming more important. The fact that Japan has many earthquakes is well known worldwide. In the field of nursing, the importance of disaster preparedness education in universities has gradually increased in Japan. Many people lose their homes in earthquakes and have to live in shelters. The relationship between pneumonia and the oral cavity environment is understood; for example, in certain shelter environments that provide an insufficient water supply, oral cavity hygiene is affected. Keeping a clean oral cavity prevents death from pneumonia, especially in elderly people. To keep a clean oral cavity, the role of dental hygienists is important. In Japan, education on disaster preparedness and response for dental hygienists in vocational university/college is rarely provided. Therefore, this is the focus of our research. We administered an anonymous questionnaire survey to 119 dental hygienist training schools by mailing them surveys asking about their education on disaster preparedness and response for dental hygienists. In this paper, we report on the education on disaster preparedness and response for dental hygienists in vocational universities and colleges in Japan.*

### **Keywords**

Dental Hygiene Education, Disaster Preparedness and Response, Role of Dental Hygienists in Disaster, Vocational University/College

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## **1. Introduction**

Japan is a country of frequent earthquakes. Of all global earthquakes, about 10% occur in Japan (Japan Meteorological Agency). In the last two decades, there were two great earthquakes in Japan: one was the Great Hanshin-Awaji Earthquake, and the other was the Great East Japan Earthquake and tsunami. It was predicted that the Nankai Trough Earthquake would occur in the coming decades, and the Japanese government stated that up to 323,000 people could be killed in Japan in the event of a powerful earthquake with its epicenter in the Nankai Trough off the central and western parts of the country (Committee for Policy Planning on Disaster Management, Central Disaster Management Council, Cabinet Office, Government of Japan, 2013) (Nanjo K.Z., Yoshida A., 2018)

Because of the Great Hanshin-Awaji Earthquake that occurred on January 17, 1995, students in our schools also became victims. Our school corporation “Tamada Gakuen” is a parent body of our university. As a school corporation in Nagata-ward, Kobe-city, where there

was tremendous damage, it enacted a “declaration for disaster prevention” aiming to further improve disaster prevention capabilities along with the community by incorporating experiences and lessons learned from the great earthquake on December 20, 2014, 20 years after the Great Hanshin-Awaji Earthquake.

We believe that in our university, in terms of professional skills training, skills related to "responding to disaster" and "saving human life and recognizing the value of life" must be developed during the early years of school life in university. Accordingly, we required qualifications necessary for civilian rescuers for all students in their freshman year (Takafuji, 2015a) and operated a nationwide unified course (a three-hour regular course) established by the Ministry of Internal Affairs and Communications of Japan in 1993 to prepare citizens to administer first aid to injured persons.

In basic nursing education, the necessity for education on disaster preparedness and response is recognized. Because of a revision to the national guidelines for curriculum development in 2009, the rule “understand basic knowledge of nursing for providing support immediately after disaster” was added and a lecture course on “nursing during disaster” was initiated in each nurse training school. Further, a program for education on nursing during disaster was developed (Yamamoto et al., 2005). However, a guideline relating to disaster does not exist in the current education for dental hygienists. Based on needs regarding the introduction of education on disaster preparedness and response in preparation for the predicted Nankai Trough Earthquake, which is expected to be massive, and prompt responses for large-scale disasters annually, we independently conducted lecture courses on disasters, namely, “Disaster relief and critical care” and “Dental hygienist and disaster” in our university (Adachi, 2016; Takafuji, 2015b).

A survey report on the role of dental hygienists in dental health care activity during disasters was recently released, and the role of dental hygienists in disasters has begun to be mentioned both domestically and internationally (Bradshaw, Bruhn, Newcomb, Giles, & Simms, 2016; Nakakuki, 2013; Janssen & Lampiris, 2007; Brannon & Connick, 2000). For these reasons, it is easy to visualize the increasing importance of education on disaster preparedness and response for dental hygienists in Japan. However, as a guideline relating to disaster does not exist in the current education for dental hygienists, it is possible that education on disaster preparedness and response is insufficient in current dental hygienist education.

Research issue in this study aimed to investigate the status of education on disaster preparedness and response for dental hygienists, and related issues in vocational universities/colleges in Japan.

## **2. Methods**

### **2.1 Target of Survey**

We conducted an anonymous questionnaire survey with principals of a dental hygienist training school by mailing the surveys to them. We sent mail to all 154 schools listed in the Japan Dental Hygienist Education Council Training School List 2014 provided by The Japan Association for Dental Hygienist Education.

### **2.2 Question Items for Training School Principals**

The following are the questions used to assess the status of disaster preparedness and response education.

Q1: Are you implementing education for disaster preparedness and response at your school?

The questions below (from Q2-1-1 to Q2-1-5) were intended for school principals who answered "Yes" to Q1.

Q2-1-1: What is the name of the course on education on disaster preparedness and response?

Q2-1-2: How often are the classes for disaster preparedness and response education held?

Q2-1-3: Is the instructor a full-time faculty member or a part-time lecturer (which includes external lecturer)?

Q2-1-4: What are the names of the other courses taught by the instructor who conducts disaster preparedness and response education? (Exclude education on disaster preparedness and response).

Q2-1-5: Has the instructor experienced activities pertaining to disaster?

The following question (Q2-2) was intended for school principals who answered "No" to Q1.

Q2-2: Do you plan to hold a course on disaster preparedness and response?

Q3: Do you have joint courses with other departments for education on disaster preparedness and response? If so, which are the departments and what are the contents of the lectures? (for school principals working on education on disaster preparedness and response)

This survey was conducted from November 2014 to January 2015.

## 2.3 Analysis Method

Analysis was performed through a simple tabulation of responses to each question item.

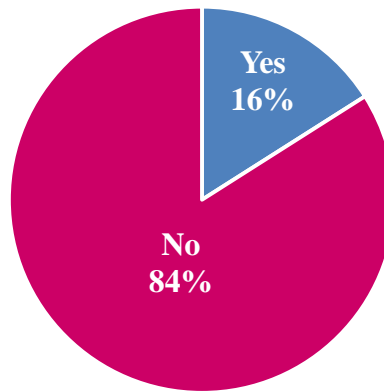
## 3. Results

### 3.1 Number of Schools That Responded

We received responses from 119 out of 154 schools (collection rate of 77.3%).

### 3.2 Status of Initiatives in Education on Disaster Preparedness and Response

For the response to “Q1: Are you implementing education on disaster preparedness and response at your school?”, 19 schools (16%) responded “Yes” and 100 responded “No” (84%) (Figure 1).



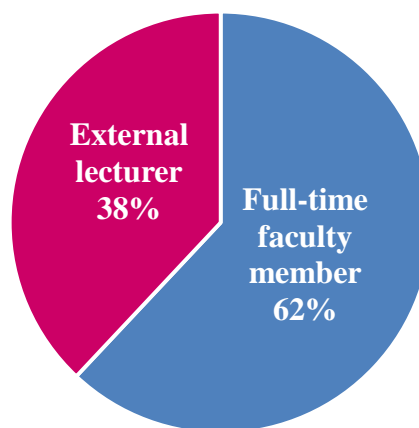
**Figure 1:** *Answers to “Q1: Are you Implementing Education on Disaster Preparedness and Response at your School?”*

Answers to the name of the course (ordinary lectures) and number of lectures of the course included “Disaster dental health,” 8; “Fostering supporters for disaster area,” 10; “Crisis management and disaster support,” 15; and “Method for disaster and supportive activities,” 15 (scheduled to be started in 2019). Some training schools held these lectures several times as part of other courses such as “Theory of dental health instruction,” “Sociology,” “Ecology for health science,” and “Surgical dentistry.” In addition, some training schools covered education on disaster preparedness and response as part of extracurricular activities or disaster drills (Table 1).

**Table 1:** Answers to “Q2-1-1: What is the name of the course on disaster preparedness and response education?” and “Q2-1-2: How often are classes for disaster preparedness and response education held?”

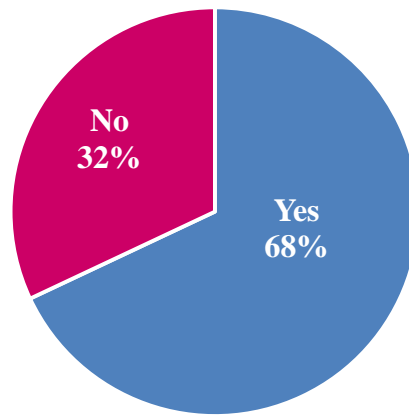
- “Method for disaster and supportive activities,” (Held in the latter term of 2015) 15 lectures
- “Dental health instruction,” 2 lectures
- “Oral health guidance,” 1 lecture
- “Sociology” “Ecology for health instruction (field for oral hygiene),” 3 lectures
- “Fostering supporters for disaster area,” 10 lectures
- Covered education on disaster preparedness and response as part of extracurricular activities or disaster drill, 2 times (No ordinary lecture on disaster preparedness and response)
- “Surgical dentistry” 1 lecture (Under consideration to be held as an ordinary lecture course in the future)
- No name of course (Special lecture), 1 lecture
- Use home room activities, 2 lectures

For the response to “Q2-1-3: Is the instructor a full-time faculty member or a part-time lecturer (which includes external lecturer)?”, 13 schools responded, “Full-time faculty member,” and eight responded “External lecturer” (Figure 2).



**Figure 2:** Answers to Q2-1-3: Is the Instructor a Full-Time Faculty Member or a Part-Time Lecturer (Which include External Lecturer)?

For the response to “Q2-1-5: Has the instructor experienced activities pertaining to disaster?”, 13 schools (68%) responded “Yes” and 6 (32%) responded “No” (Figure 3).



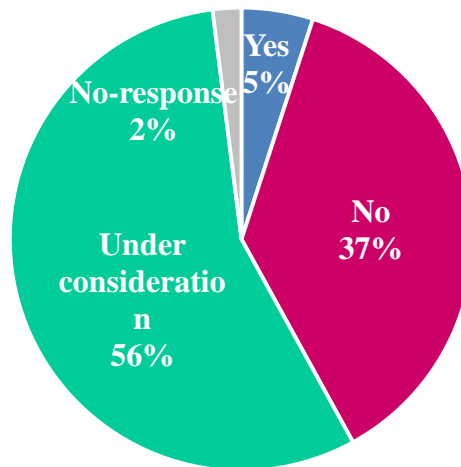
**Figure 3:** Answers to Q2-1-5: Has the Instructor Experienced Activities Pertaining to Disaster?

The answers to “Q3: Do you have joint classes with other departments for education on disaster preparedness and response? If so, which are the departments and what are the contents of the lectures? (for school principals working on education of disaster preparedness and response)” are shown in Table 2.

**Table 2:** Answers to Q3: Do you have joint courses with other departments for education on disaster preparedness and response? If so, which are the departments and what are the contents of the lectures? (for school principals working on education on disaster preparedness and response)

- 1 lecture with department of emergency medicine
- 1 of 3 lectures was held with departments of nursing; 1 lecture was held for support activity on disaster (including exercises)
- “Crisis management and disaster support” was initiated for all five departments (Nurse, Social welfare, Rehabilitation, Acupuncture sports, and Oral health) students.

We asked school principals who answered "No" to Q1, “Q2-2: Do you plan to hold a course for disaster preparedness and response?” Five schools (5%) responded “Yes,” 37 (37%) responded “No,” 56 (56%) responded “Under consideration,” and 2 (2%) had no response (Figure 4).



**Figure 4:** Answers to Q2-2: Do you have a Plan to Hold a Class for Disaster Preparedness and Response?

#### 4. Discussion

Disaster education for citizens is indispensable especially in Japan, which has many disasters. Simultaneous education for Japanese citizens and education for disaster preparedness is essential for medical staff, who are dedicated to disaster relief services; however, the status of education on disaster preparedness is inadequate for some job categories, especially medical staff. The number of dental hygienists working in disaster-stricken regions has been increasing since the Great Hanshin-Awaji Earthquake. Based on a cursory examination of education for dental hygienists, we could not find a category referring to disaster education in the Dental Hygienist School Training Registry and national exam question criteria for dental hygienists. (However, the category that refers to disaster will be added in the national exam question criteria within a year). Dental hygienists should prepare for activities in disaster-stricken regions as professional members who must work in such areas and avoid haphazard behaviors in such regions (Takafuji, 2012a). Learning about activities in disaster-stricken regions in undergraduate courses is meaningful and essential (Takafuji, 2012b). Therefore, we think that vocational universities/colleges should implement education for disaster preparedness.

##### 4.1 Issues in Education on Disaster Preparedness and Response at Vocational Universities/Colleges for Dental Hygienists

Based on the results of our questionnaire survey, it was found that there were few vocational universities/colleges for dental hygienists that presently conducted education on



disaster preparedness and response. When we consider the role of dental hygienists, the introduction of education on disaster preparedness and response in vocational colleges for dental hygienists is essential, and the number of such vocational colleges that provide education on disaster preparedness and response may increase.

Currently, most teachers in charge of education on disaster preparedness and response at a training school have experienced activities during disasters. Since a standardized method of education on disaster preparedness and response is not established, it tends to depend on persons experienced in activities during disasters. Few vocational colleges for dental hygienists provided education on disaster preparedness and response. Since education on disaster preparedness and response at training schools tends to rely on individuals experienced in activities during disasters, it is imperative to establish education on disaster preparedness and response in vocational colleges for dental hygienists. Multiprofessional collaboration is essential during disasters. It is meaningful to become aware of multiprofessional collaboration at the educational stage; however, only a few vocational colleges held joint lectures with other departments. This may be due to the fact that most colleges (with a single department) for dental hygienists are not affiliated with a university (with multiple departments). Even in university courses (with multiple departments) for dental hygienists, joint lectures with other departments might be unrealistic because of the lack of an independent course associated with education on disaster preparedness and response for dental hygienists. We considered four goals as the pillars for establishing education on disaster preparedness and response. The first goal is to construct model lectures on such education. The second goal is to construct an assessment system for educational courses. The third goal is sufficiency of basic education on disaster preparedness and response. Finally, the fourth goal is collaboration among faculties and departments regarding education on disaster preparedness and response, to encourage collaboration among occupations.

#### **4.2 Expectations of Education on Disaster Preparedness and Response**

The concept of disaster reduction implies that disasters cannot be stopped, but their effects can be reduced through disaster planning. In addressing the need for education on disaster preparedness and response for dental hygienists, it is important to not only understand the meaning of what dental hygienists should do as dental health workers in a disaster but also to understand the necessity and need for implementation of disaster reduction.

Education on disaster management is useful not only in handling dental treatment during urgent situations, but also during emergencies in the course of regular dental treatment; this aspect of urgent care has implications for education on disaster preparedness and response for

dental hygienists (Bradshaw, Bruhn, Newcomb, Giles, & Simms, 2016). As a result, implications in terms of addressing the need for education on disaster preparedness and response for dental hygienists include acquiring the practical ability to cope with crisis in normal dental treatments. Furthermore, in gaining awareness regarding professionalism, which relates to living life as medical staff, management skills of thinking and acting responsibly also should be cultivated.

Sufficiency of medical care and social welfare infrastructure is essential for a safe and secure life. To create an environment in hospitals and clinical facilities in which everyone can receive medical treatment when needed, it would be beneficial to be conscious about "Urban planning" through which everyone can live comfortably.

Education on disaster preparedness and response for dental hygienists could lead to insights about the following topics (Takafuji, 2015a).

- Knowing how to support human beings
- Knowing how to provide support as a member of the dental profession
- Developing the ability to manage emergencies during normal treatment situations
- Understanding the importance of life value and cultivating high ethical standards

#### **4.3 Learning Necessary Qualities for Dental Hygienists through Education on Disaster Preparedness and Response**

During disasters, dental hygienists have many roles. They may need to not only fulfill duties as specialists of dental hygiene, but also shoulder responsibilities other than medical services and be open to performing various basic tasks in such situations.

Finally, it is natural to accomplish a mission of a duty as a member of medical staff even if suffering through a disaster. This will lead to an increase in sensitivity to the preciousness of life.

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