

# Evaluating Changes in Disaster Preparedness Awareness among Nursing Students in Japan: Insights after Three Years of Nursing Education

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## Abstract

**Background:** Disaster preparedness is a critical aspect of nursing education, enhancing students' ability to respond effectively in emergencies. However, the extent to which nursing curricula influence disaster preparedness awareness remains underexplored. Our study found that 39% of students reported improved awareness after three years, highlighting the need for targeted curriculum enhancements. **Purpose:** To evaluate changes in disaster preparedness awareness among nursing students over three years of education and identify gaps in current curricula impacting this awareness. **Results:** Findings indicate that while 39% of students showed improved awareness, significant gaps remain, suggesting the need for a dedicated course on emergency preparedness. **Conclusions:** This study emphasizes the importance of integrating comprehensive disaster preparedness education within nursing curricula to address these gaps and foster resilience in future healthcare professionals.

## Keywords

Disaster Preparedness Consciousness, Nursing Students

## 1. Introduction

Nursing students play a crucial role in disaster response, requiring both theoretical

knowledge and practical preparedness to act effectively during emergencies. Disaster preparedness awareness (DPA), defined as the understanding and readiness to manage health crises, is therefore an essential component of nursing education.

While nursing programs cover various topics, the extent to which current curricula enhance DPA remains inadequately understood. Additionally, gaps in understanding how third-year students develop their knowledge over time require attention [1] [2]. This study aims to fill this gap by evaluating changes in nursing students' DPA over three years and offering recommendations for curriculum development.

## 2. Methods

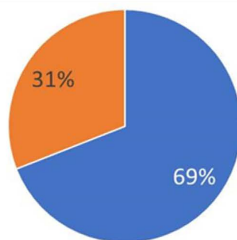
### 2.1. Participants and Data Collection

The study focused on 153 students at Seiwa Nursing School across three academic years (Figure 1). Participants answered a survey measuring changes in their awareness of disaster preparedness. The survey defined DPA as the knowledge, attitudes, and behaviors essential for effective emergency response, ensuring consistency in understanding across participants [3].

Question::

After enrolling in nursing school and learning about medical care, did your awareness of disaster preparedness change?

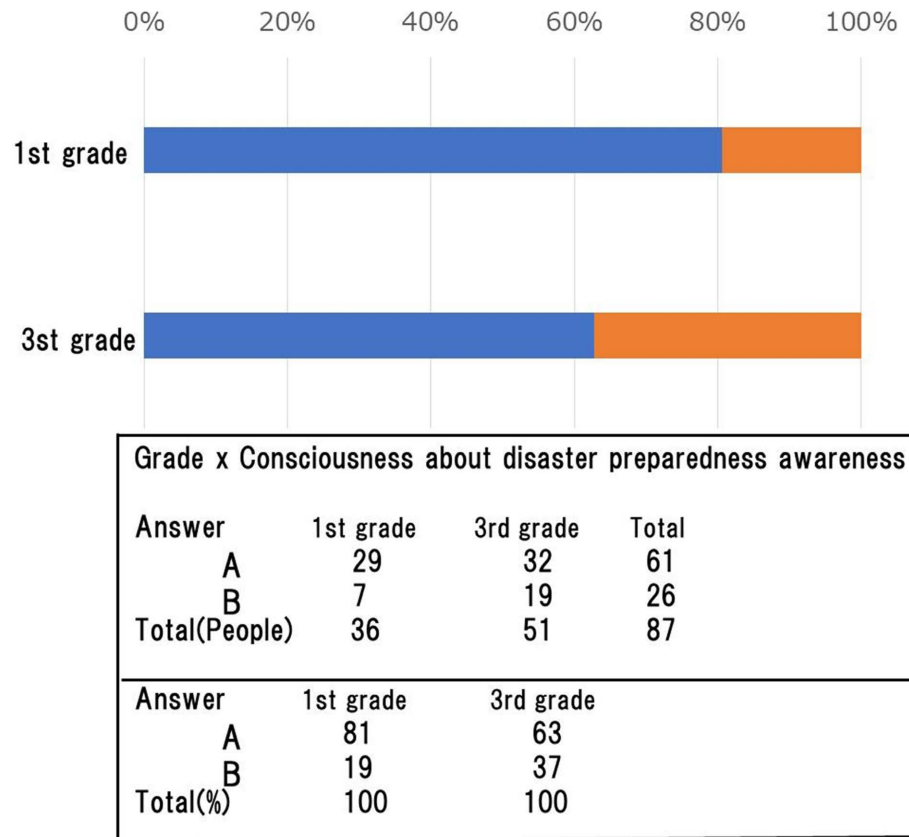
	People	Composition ratio
<span style="color: blue;">■</span> A No, my awareness of disaster preparedness did not change after enrolling in nursing school compared to my awareness before enrollment.	105(people)	31%
<span style="color: orange;">■</span> B Yes, my awareness of disaster preparedness changed after enrolling in nursing school compared to my awareness before enrollment.	48(people)	69%
	Total 153(people)	100%



**Figure 1.** Changes in awareness of disaster preparedness among nursing students from all three academic years after enrolling in nursing school and learning about medical care.

### 2.2. Data Analysis

To identify trends, data were analyzed using descriptive statistics. For example, 37% of students reported increased awareness by their third year, highlighting measurable progress despite persistent gaps (Figure 1 and Figure 2) [4]. Results were categorized by academic year and evaluated for patterns in DPA development.



**Figure 2.** Comparison of disaster preparedness awareness between first-year and third-year nursing students.

### 2.3. Question

After enrolling in nursing school and learning about medical care, did your awareness of disaster preparedness change?

A

No, my awareness of disaster preparedness did not change after enrolling in nursing school compared to before enrollment.

B

Yes, my awareness of disaster preparedness changed after enrolling in nursing school compared to before enrollment.

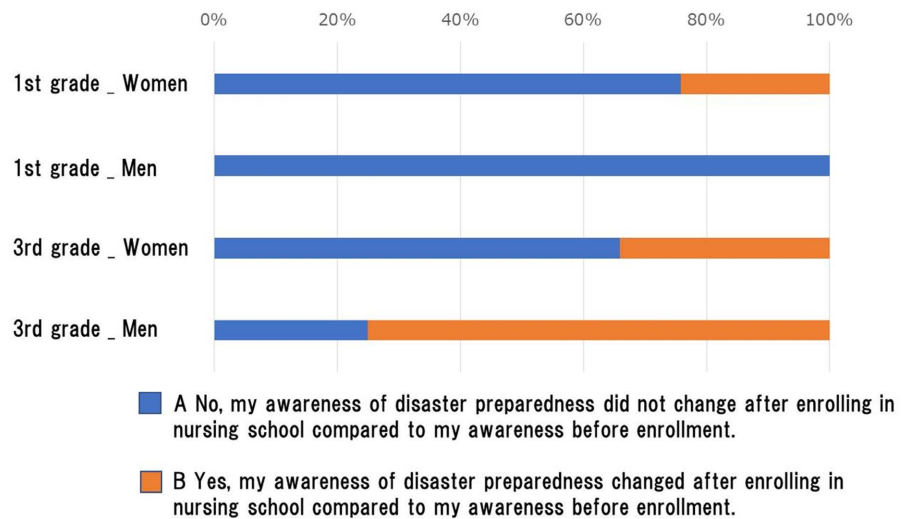
If you selected B (“Yes”), please provide detailed reasons or examples of the specific changes in your awareness. For instance, did you gain new knowledge, develop practical skills, or change your perspective on disaster preparedness?

## 3. Results

### 3.1. Trends in Disaster Preparedness Awareness by Year

The results showed that 37% of third-year students reported improved awareness compared to their first year, underscoring progress but also indicating a need for enhanced curricular support [5] (Figure 3 and Figure 4).

We examined whether changes in disaster preparedness awareness after enrollment differed by sex among first-, second-, and third-year students.



**Figure 3.** Comparison of changes in disaster preparedness awareness by sex among first- and third-year nursing students.

Grade x Gender x Consciousness about disaster preparedness awareness					
Answer	1st grade _ Women	1st grade _ Men	3rd grade _ Women	3rd grade _ Men	Total
A	22	7	31	1	61
B	7	0	16	3	26
Total(People)	29	7	47	4	87

Answer	1st grade _ Women	1st grade _ Men	3rd grade _ Women	3rd grade _ Men
A	76	100	66	25
B	24	0	34	75
Total(%)	100	100	100	100

**Figure 4.** Distribution of disaster preparedness awareness by grade and gender.

### 3.2. Curriculum Gaps Identified

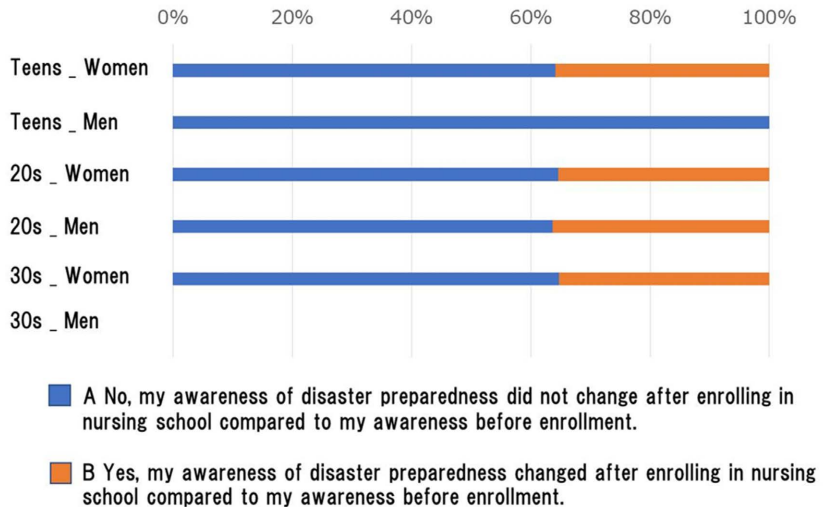
Findings revealed that while students gained theoretical knowledge, practical training in emergency response was limited. To cite the figure, over 60% of students expressed uncertainty about applying disaster response protocols, highlighting the need for structured training [6].

### 3.3. Changes in Disaster Preparedness Awareness among Nursing Students across Different Age Groups

Nursing students ranged in age from teens to 30 s. There were 7 male and 39 female students in their teens, 11 male and 65 female students in their 20s, and 17 female students in their 30 s, with no male students in that age group (Figure 5 and Figure 6). Female students outnumbered male students across all age groups. Women across all age groups showed higher levels of disaster preparedness awareness than men. Awareness was highest among older women, with preparedness levels at 36% for those in their teens, and 35% for those in their 20s and 30s (Figure 5 and Figure 6).

Among men, similar changes in disaster preparedness awareness were observed across age groups, mirroring the trends seen among women. However, male students demonstrated slightly lower levels of overall preparedness compared to female students.

We also analyzed how disaster preparedness awareness changed among nursing students of different age groups.



**Figure 5.** Changes in disaster preparedness awareness among nursing students of different age groups.

Age x gender x in disaster preparedness awareness						
Answer	Teens_Women	Teens_Men	20s_Women	20s_Men	30s_Women	30s_Men
A	25	7	42	7	11	0
B	14	0	23	4	6	0
Total (people)	39	7	65	11	17	-

Answer	Teens_Women	Teens_Men	20s_Women	20s_Men	30s_Women	30s_Men
A	64	100	63	64	65	0
B	36	0	35	36	35	0
Total (%)	100	100	100	100	100	-

**Figure 6.** Breakdown of disaster preparedness awareness by age and gender among nursing students.

### 3.4. Specific Changes in the Disaster Preparedness Awareness of Nursing Students

We investigated changes in disaster preparedness awareness among nursing students. Those who experienced changes were asked to describe the specific adjustments they made.

First-year students who reported changes in disaster preparedness awareness most commonly cited incorporating infection prevention measures as a specific behavior change. Additionally, several students indicated that their awareness increased after attending disaster nursing lectures. For example, many nursing students reported becoming more mindful of disaster prevention after learning about it during their lectures.

These findings suggest that third-year students have increased disaster preparedness awareness due to their advanced medical knowledge and cumulative educational experiences. This indicates that the structured disaster nursing curriculum effectively contributes to improving preparedness levels among nursing students.

#### **4. Conclusion**

Upon enrollment in nursing school, male students exhibited lower levels of disaster preparedness awareness compared to female students. However, both male and female students demonstrated increased awareness as they advanced to the next year. Health consciousness among nursing students varied by age, with older students showing higher levels of disaster preparedness awareness.

#### **5. Discussion**

These findings highlight the pivotal role of nursing education in enhancing disaster preparedness and health consciousness among nursing students. As students acquire specialized medical knowledge, their awareness of health and disaster readiness significantly increases. This change indicates that nursing education establishes a critical foundation for nurses to respond efficiently and effectively in disaster situations [5].

Unfortunately, some students showed only minimal changes in disaster preparedness awareness. This discrepancy may arise from variations in the quality and scope of classroom instruction, differences in access to practical training experiences, or differing baseline levels of disaster awareness among students [7]. These factors suggest a need for more tailored and comprehensive educational approaches to ensure that all students benefit equally from disaster preparedness training.

To address these disparities, future nursing education programs should prioritize integrating practical disaster training and simulation exercises. Such approaches can equip students with the skills and confidence required to fulfill their roles as nurses during a disaster [6]. Expanding simulation-based education, for instance, could bridge existing gaps by providing realistic, hands-on experiences that strengthen students' disaster response capabilities and deepen their understanding of critical scenarios [4].

Additionally, assessing each student's baseline disaster awareness before enrollment may enable educators to customize teaching strategies to better meet individual learning needs. By tailoring educational content to different levels of preparedness, nursing programs can maximize the effectiveness of disaster prepared-

ness education and ensure students are adequately prepared for emergencies [2].

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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