## Research Letters

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# Disaster Preparedness of Nursing Students in Northern Cyprus: Descriptive Cross-Sectional Study

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## Abstract

**Objective:** This study aims to evaluate disaster preparedness of undergraduate nursing students.

**Methods:** This descriptive cross-sectional study included 302 voluntary nursing students from a university in Northern Cyprus. Data were collected through an online survey using Google Forms, which included a descriptive information form and the General Disaster Preparedness Belief Scale (GDPBS).

**Results:** The mean age of the participants was $20.64 \pm 2.02$ years. Among the participants, 41.7% had prior experience with disasters, and 77.2% expressed a need for disaster education. The average GDPBS total score was high, and the mean score of the sub-dimensions was moderate. Nursing students who expressed a need for disaster education had higher scores on the severity and self-efficacy subscales of the GDPBS ($p<0.05$).

**Conclusion:** The level of disease preparedness was moderate in nursing students in Northern Cyprus. Therefore, education based on the health belief model, which assumes that positive health behaviors are affected by knowledge and attitudes, may be useful to improve disaster preparedness in nursing students.

Disasters can lead to physical destruction of buildings, social and economic deterioration, pain, and suffering, as well as injuries, and loss of life. Since the timing of disasters is unpredictable, effective disaster planning is necessary. Nurses, as integral members of healthcare teams, play an active role in disaster management. From their undergraduate studies onward, nurses are expected to be prepared to handle various aspects, such as risk evaluation, strategy development, and post-disaster healthcare services.[1]

Previous studies focusing on university students have found that their knowledge level regarding disasters is moderate, and their preparedness for disasters is significantly influenced by their knowledge and attitudes.[2,3] A systematic literature review examining nurses' disaster preparedness concluded that nurses generally exhibit inadequate preparedness and lack confidence in their ability to respond effectively to disasters.[4] However, no specific studies analyzing disaster preparedness among nursing students have been found. Therefore, the objective of this study is to assess disaster preparedness in nursing students based on the Health Belief Model (HBM). The HBM posits that positive health behaviors are influenced by sociodemographic characteristics, knowledge, and attitudes.[5]

## Method

### Study Design and Setting

This study employed a descriptive cross-sectional research design and was conducted at the Nursing Department of the Faculty of Health Sciences, Eastern Mediterranean University, located in Northern Cyprus.

### Participants

The study population consisted of 345 students enrolled in the nursing department during the 2020/ 2021 academic year. The sample included 302 students; representing 87.5% of the population.

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## Data Collection Tool

### Descriptive information form

This form comprised of 25 questions on sociodemographic characteristics and disaster-related information.[5] To improve content validity, expert opinions were sought from 5 experienced nurses in disaster management. A pilot study involved 10 students.

### General Disaster Preparedness Belief (GDPBS)

The HBM provides a framework for predicting disaster preparedness behavior. Several factors within the HBM are considered as predictors of disaster preparedness, including perception of susceptibility to experiencing a disaster, perceived severity of a disaster, and benefits of being prepared, as well as perceived barriers to preparedness, cues to action for disaster preparedness, and self-efficacy beliefs in coping with a disaster.[5] The GDPBS, based on the HBM, consisted of 45 items divided into 6 subscales. Items were scored on a 5-point Likert scale, with possible scores ranging from 45 to 225. The original scale demonstrated a Cronbach's alpha of 0.93.[5]

### Data Collection Process

Data were collected between November and December 2020. Institutional permission was obtained from the department where the study was conducted. Data were collected online using Google Forms.

### Statistical Analysis

Data analysis was performed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive information was presented using means, standard deviations, numbers, and percentages. The Shapiro-Wilk test was employed to test normality. Mann Whitney U and Kruskall Wallis H tests were used for data analysis, with the Scheffe test used as a post hoc test.

## Results

The average age of the students was 20.64 ± 2.02, and 77.2% of them expressed the need for disaster education (Table 1). Although not shown in the table, it is observed that the average scores of the sub-dimensions of GDPBS were moderate. There was a statistically significantly difference between the risk perceptions about the place of residence and the scores obtained from the susceptibility and severity subscales ($P < 0.05$). There was a statistically significantly difference between the risk perceptions about the place of residence and the scores obtained from the susceptibility and severity subscales ($P < 0.05$) (Table 2).

## Discussion

Nurses should have adequate knowledge, skills, and self-sufficiency for disaster preparedness.[6] Studies conducted with nurses indicate that the average score for nurses' disaster preparedness is moderate.[7–10] It has been reported that nurses' skills, knowledge, disaster education, and disaster experience have an impact on their disaster preparedness.[8,9] Similarly, studies with healthcare students suggest that students' preparedness for disasters is moderate. In this study, although most participants had some information about disasters, they expressed a need for disaster education. Nursing educators should integrate the subject of disaster management into

**Table 1.** Descriptive characteristics and disease-related information (n = 302)

| Descriptive characteristics | Mean | Standard deviation (SD) |
|---|---|---|
| **Age** | 20.64 | 2.02 |
| | **Number (n)** | **Percentage (%)** |
| **Gender** | | |
| Male | 102 | 33.8 |
| Female | 200 | 66.2 |
| **Ever experienced any disaster** | | |
| Yes | 126 | 41.7 |
| No | 176 | 58.3 |
| **Type of disaster** | | |
| Earthquake | 107 | 35.4 |
| Flood | 10 | 3.3 |
| Other | 9 | 3.0 |
| Did not experience | 176 | 58.3 |
| **Disaster experience in family** | | |
| Yes | 135 | 44.7 |
| No | 167 | 55.3 |
| **Risk perception about place of residence** | | |
| No risk | 11 | 3.6 |
| Low risk | 58 | 19.2 |
| Medium risk | 84 | 27.8 |
| High risk | 100 | 33.1 |
| Very high risk | 49 | 16.2 |
| **Has information on disasters** | | |
| No | 53 | 17.5 |
| Yes | 249 | 82.5 |
| **Has a family disaster plan** | | |
| No | 242 | 80.1 |
| Yes | 60 | 19.9 |
| **Has information about university's disaster plan** | | |
| No | 242 | 80.1 |
| Yes | 60 | 19.9 |
| **Need for disaster education** | | |
| No | 69 | 22.8 |
| Yes | 233 | 77.2 |
| **Has a go bag** | | |
| No | 270 | 89.4 |
| Yes | 32 | 10.6 |
| **Has information about muster points** | | |
| No | 215 | 71.2 |
| Yes | 87 | 28.8 |
| | **Mean** | **SD** |
| **Disaster preparedness assessment (DAS)** | 3.95 | 1.92 |

the nursing curriculum or revise the existing curriculum to address the learning needs of students.

Updating knowledge on disaster management and preparedness is crucial to minimize potential losses after a disaster. Studies have shown that knowledge and attitude factors significantly predict readiness to practice.[2,3] In this study, the average total score for students' GDPBS was high, and the mean scores of the sub-dimensions were at a moderate level. Students possessing a "go bag" and those who had information about disasters and muster points obtained higher scores on the GDPBS subscales. Participants with a higher level of perceived risks obtained higher

**Table 2.** Comparison between descriptive characteristics and scores obtained from the subscales of GDPBS

| Characteristics | Susceptibility Mean(SD) | Test*P | Severity Mean(SD) | Test/P | Benefits Mean(SD) | Test/P | Barriers Mean(SD) | Test/P | Cues to action Mean(SD) | Test/P | Self-efficacy Mean(SD) | Test/P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Gender*** | | | | | | | | | | | | |
| Female | 230.9 ± 30.8 | **0.001** | 160.2 ± 30.2 | **0.001** | 250.3 ± 40.8 | **0.012** | 530.2 ± 120.9 | **0.005** | 170.6 ± 30.6 | 0.249 | 350.2 ± 60.0 | **0.002** |
| Male | 220.1 ± 30.9 | | 140.3 ± 20.9 | | 230.7 ± 50.0 | | 480.8 ± 120.5 | | 170.1 ± 30.6 | | 370.6 ± 70.7 | |
| **Risk perception about place of residence**** | | | | | | | | | | | | |
| No risk | 200.8 ± 40.1 | **0.001** | 130.6 ± 30.4 | **0.001** | 230.5 ± 60.2 | 0.074 | 470.7 ± 150.6 | 0.098 | 170.1 ± 30.9 | 0.878 | 350.4 ± 60.5 | 0.277 |
| Low risk | 220.5 ± 30.4 | | 150.2 ± 30.0 | | 240.4 ± 50.1 | | 510.2 ± 120.9 | | 170.3 ± 30.8 | | 360.0 ± 60.1 | |
| Medium risk | 240.2 ± 30.8 | | 160.1 ± 30.1 | | 250.6 ± 40.4 | | 530.1 ± 120.7 | | 170.4 ± 30.3 | | 350.5 ± 60.9 | |
| High risk | 240.5 ± 20.9 | | 160.6 ± 20.8 | | 240.7 ± 40.1 | | 530.5 ± 100.4 | | 170.7 ± 30.4 | | 360.5 ± 60.3 | |
| Very high risk | 270.0 ± 20.7 | | 170.7 ± 20.8 | | 270.1 ± 30.6 | | 550.5 ± 100.4 | | 180.1 ± 40.0 | | 390.9 ± 70.4 | |
| **Has a family disaster plan*** | | | | | | | | | | | | |
| No | 220.8 ± 30.6 | **0.001** | 150.3 ± 30.3 | **0.011** | 240.5 ± 40.9 | 0.071 | 500.4 ± 130.0 | **0.001** | 170.1 ± 30.6 | **0.001** | 350.5 ± 60.4 | **0.013** |
| Yes | 240.9 ± 40.1 | | 160.5 ± 20.7 | | 250.8 ± 40.9 | | 570.3 ± 100.9 | | 180.8 ± 30.4 | | 370.9 ± 60.5 | |
| **Has information about university's disaster plan*** | | | | | | | | | | | | |
| No | 230.2 ± 30.9 | 0.831 | 150.5 ± 30.3 | 0.411 | 240.5 ± 50.1 | 0.066 | 510.8 ± 120.6 | 0.944 | 170.4 ± 30.5 | 0.777 | 350.6 ± 60.6 | **0.049** |
| Yes | 230.3 ± 30.7 | | 150.9 ± 20.9 | | 250.8 ± 40.1 | | 510.6 ± 140.2 | | 170.5 ± 30.9 | | 370.5 ± 50.7 | |
| **Has information on disasters*** | | | | | | | | | | | | |
| No | 210.1 ± 40.0 | **0.001** | 140.0 ± 30.7 | **0.001** | 220.6 ± 60.1 | **0.001** | 460.0 ± 40.6 | **0.001** | 160.1 ± 30.4 | **0.005** | 330.7 ± 40.8 | **0.004** |
| Yes | 230.7 ± 30.6 | | 150.9 ± 30.0 | | 250.2 ± 40.5 | | 530.0 ± 120.2 | | 170.7 ± 30.6 | | 360.5 ± 60.7 | |
| **Need for disaster education*** | | | | | | | | | | | | |
| No | 220.8 (40.2) | 0.259 | 140.5 (30.2) | **0.001** | 240.7 ± 50.0 | 0.916 | 510.3 ± 30.2 | 0.732 | 510.3 ± 30.6 | 0.326 | 350.2 ± 70.1 | **0.001** |
| Yes | 230.4 (30.78) | | 150.9 (30.2) | | 240.8 ± 4 0.9 | | 510.9 ± 120.8 | | 510.9 ± 30.6 | | 380.2 ± 60.1 | |
| **Has a go bag*** | | | | | | | | | | | | |
| No | 230.0 ± 30.9 | **0.009** | 150.4 ± 30.3 | 0.074 | 240.7 ± 50.0 | 0.486 | 510.2 ± 120.8 | **0.026** | 170.1 ± 30.5 | **0.001** | 350.6 ± 60.3 | **0.004** |
| Yes | 240.9 ± 20.9 | | 160.5 ± 20.6 | | 250.3 ± 30.7 | | 560.5 ± 130.0 | | 190.6 ± 30.8 | | 390.1 ± 70.4 | |
| **Has information about muster points*** | | | | | | | | | | | | |
| No | 220.8 ± 30.7 | **0.002** | 150.4 ± 30.2 | 0.399 | 240.4 ± 50.1 | **0.039** | 500.7 ± 130.0 | **0.025** | 170.0 ± 30.5 | **0.003** | 340.8 ± 60.4 | **0.001** |
| Yes | 240.3 ± 30.8 | | 150.8 ± 30.2 | | 250.7 ± 40.4 | | 540.4 ± 120.2 | | 180.4 ± 30.6 | | 380.9 ± 50.9 | |
| *P* < 0.05 | | | | | | | | | | | | |

*Mann-Whitney U test.
**Kruskal-Wallis H test.

scores on the susceptibility and severity subscales of the GDPBS. These findings underscore the critical importance of disaster preparedness, particularly in countries like Turkey, which face an increased risk of earthquakes. Therefore, it is suggested that reminding the public about recent disasters through public service announcements or documentaries may help maintain risk perception and increase awareness about possible disasters.

The results of this study are limited to nursing students at the university where the research was conducted. Therefore, the findings can only be generalized to this specific group.

## Conclusion

Being prepared for disasters is crucial, especially in regions such as Turkey where serious casualties are experienced. This study revealed that the disaster preparedness level of nursing students is moderate, and they need disaster education. HBM-based education programs, which assumes that positive health behaviors are affected by knowledge and attitudes, could be developed to enhance disaster preparedness. To achieve this, dedicated sessions can be organized to practice routine disaster scenarios and provide formal training for disaster preparedness. Further studies can be conducted to plan qualitative studies to determine students' perceptions of general disaster preparedness.

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