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ARAŞTIRMA MAKALESİ

DEPREM SONRASI HEMŞİRELİK ÖĞRENCİLERİNDE TRAVMA SONRASI STRES BOZUKLUĞU VE ACI İLE YÜZLEŞME

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Öz

Bu çalışma, depremin hemşirelik öğrencileri üzerindeki psikolojik ve duygusal sonuçlarını araştırmaktadır. Bu çalışmada, depremin Türkiye'deki hemşirelik öğrencileri üzerindeki deneyimlerini ve psikolojik etkilerini araştırmak için nitel derinlemesine görüşmeler ve nicel anketlerden oluşan karma bir araştırma tasarımı kullanılmıştır. Temsili bir örneklem sağlamak için tabakalı örnekleme kullanılmıştır. Çalışma evreni, Kahramanmaraş'ta depremden ciddi şekilde etkilenen 39 hemşirelik öğrencisinden oluşmaktadır. Nitel görüşmeler öğrencilerin kişisel bakış açılarını ve baş etme mekanizmalarını yakalamayı amaçlarken, nicel anketler standartlaştırılmış bir ölçek kullanarak deprem sonrası travma düzeyini ölçmüştür. Veriler Haziran ve Ağustos 2023 tarihleri arasında yüz yüze görüşmeler yoluyla toplanmış olup nitel verilerin analizinde içerik analizi, nicel verilerin analizinde ise betimsel istatistikler kullanılmıştır. Çalışmanın sonuçları, depremi yaşayan hemşirelik öğrencileri üzerinde önemli psikolojik ve duygusal etkiler olduğunu ortaya koymuştur. Katılımcılar anksiyete, stres ve travma sonrası stres bozukluğu gibi çeşitli semptomlar bildirmişlerdir. Bulgular ayrıca, depremin öğrencilerin refahı üzerindeki olumsuz etkilerini hafifletmede sosyal destek ve başa çıkma mekanizmalarının önemini vurgulamıştır. Bu çalışma, depremin hemşirelik öğrencileri üzerindeki psikolojik etkilerine ilişkin değerli bilgiler sunmaktadır. Eğitim kurumları ve politika yapıcılar, hemşirelik öğrencilerinin ruh sağlığı ihtiyaçlarını ele alarak, afetler karşısında dirençli ve gelişen bir akademik topluluğu teşvik edebilirler.

Anahtar Kelimeler: Deprem, Hemşirelik Öğrencisi, Acı, Travma Sonrası Stres Bozukluğu.

FACING POSTTRAUMATIC STRESS DISORDER AND SUFFERING IN NURSING STUDENTS AFTER THE EARTHQUAKE

Abstract

This study investigates the psychological and emotional consequences of an earthquake on nursing students. This study utilized a mixed research design consisting of qualitative in-depth interviews and quantitative questionnaires to explore the experiences and psychological effects of an earthquake on nursing students in Türkiye. Stratified sampling was used to provide a representative sample. The study population included 39 nursing students who were severely affected by an earthquake in Kahramanmaraş. The qualitative interviews aimed to capture the personal perspectives and coping mechanisms of the students, while the quantitative questionnaires measured the level of post-earthquake trauma using a standardized scale. The data were collected through face-to-face interviews between June and August 2023, and content analysis was employed to analyze the qualitative data, while descriptive statistics were used for the quantitative data analysis. The results of the study revealed significant psychological and emotional effects on nursing students who experienced the earthquake. Participants reported various symptoms such as anxiety, stress, and posttraumatic stress disorder (PTSD). The findings also emphasised the importance of social support and coping mechanisms in mitigating the negative effects of the earthquake on students' well-being. This study provides valuable insights into the psychological effects of the earthquake on nursing students. By addressing the mental health needs of nursing students, educational institutions and policy makers can foster a thriving academic community that is resilient in the face of disasters.
Keywords: Earthquake, Nursing Student, Suffering, Posttraumatic Stress Disorder.

1. INTRODUCTION

Posttraumatic Stress disorder (PTSD) is a psychiatric disorder that occurs after witnessing or experiencing a life-threatening event. In PTSD, the traumatic event is categorized under three criteria: hypervigilance, avoidance of stimuli reminiscent or evocative of the trauma, and symptoms lasting at least one month, such as reliving the traumatic event in dreams or flashbacks (1). PTSD can develop after traumas such as marriage, child abuse, violence, traffic accidents, terrorism, other natural disasters, military conflicts, and especially earthquakes. PTSD is the most common psychological sequela in adult survivors after an earthquake (2). PTSD has been frequently reported in earthquake zones around the world (China, Taiwan, Japan, Türkiye, California, Armenia, Pakistan, Azerbaijan, and Haiti). Research has shown that PTSD has different prevalence rates in different populations. Tanrıkulu et al. (2023) found that 12% of schizophrenia patients and 25% of healthy individuals developed earthquake-related PTSD two years after the Elazığ earthquake in Türkiye in 2020 (3). A study in Nepal found that there was a high prevalence of PTSD among earthquake survivors and that some sociodemographic factors such as age, education, and occupation were associated with increased symptoms (4). A long-term study in Türkiye also found stable rates of PTSD in the 10 years after the earthquake, with avoidance symptoms emerging as an important determinant (5).

Türkiye has a rich experience with earthquakes. According to Turkish statistics, 18 earthquakes of magnitude ≥6 occurred in the 19th and 20th centuries. These earthquakes include the Marmara earthquake (1999), the Van earthquake (2011), and the 2023 earthquake in 10 provinces in Southeastern Anatolia. These earthquakes affected a large residential area, causing both physical damage and mental reactions in millions of people, and many of our citizens lost their lives in the earthquake. Many people left the region after the earthquake (6, 7).

In Türkiye, there are several studies investigating the impact of earthquakes on nursing students. Öztekin et al. (2015) found that students in Istanbul, a city prone to earthquakes, had a good understanding of disaster preparedness and response, especially about earthquakes (8). Ceyhan et al. (2007) found that earthquake survivors, including nursing students, experienced lower quality of life and academic achievement (9). Seren & Dikeç (2023) emphasized the necessity of well-organized health and nursing care after the earthquake and suggested a role for nursing students in disaster preparedness and management (10). Koçoğlu et al. (2023) found that trauma levels were higher in female university students (11). This study aimed to determine the post-earthquake trauma levels of nursing students and to investigate their perspectives and attitudes toward coping with pain. Despite previous studies examining the impact of earthquakes in Türkiye on nursing students, there is insufficient literature focusing specifically on their post-earthquake trauma levels and their views on coping with pain (11). By conducting this study, we aim to fill this research gap and contribute to the existing body of knowledge in the field of disaster nursing. In addition, our study differs from previous research by focusing on nursing students' unique experiences and perceptions after the earthquake rather than only examining disaster preparedness interventions. Through qualitative exploration of nursing students' perspectives, we aim to uncover valuable insights that can inform disaster nursing education, policy development, and future interventions to support nursing students' well-being and resilience in post-earthquake contexts. Since traumatic experiences are unexpected events in the course of life, the reactions to these events can be seen as normal reactions to an unusual situation. Although the reaction of people to this abnormal event is similar for many people, it is considered within the limits of normal behavior. What is abnormal is that these behaviors show themselves as the same or more even after a long time after the trauma. The level of trauma and confrontation with pain after the earthquake may show different characteristics in each person. It is thought that determining the post-earthquake trauma levels of nursing students, especially those who will work in the field of health, both in terms of their own psychological health and the people they will care for, and defining their confrontation with pain will contribute to the literature.

2. METHODS

2. 1. Research model

In this study, a mixed design methodology was used, combining qualitative, in-depth individual interviews with quantitative questionnaires to explore the process of students' earthquake experiences in more detail. By combining multiple data sources and methodologies, this research model aims to capture the rich narratives and personal perspectives of students who have experienced seismic events. The qualitative component of this study utilizes in-depth individual interviews to explore in depth the experiences, emotions, and coping mechanisms of students who have experienced earthquakes. Complementing the qualitative interviews, the quantitative survey component uses standardized measures to collect data on a broader scale.

2.2. Participants

The study population focused on 50 1st, 2nd, 3rd, and 4th year nursing students enrolled in a university in Türkiye who were severely affected by an earthquake on February 6, 2023, with the epicenter in Kahramanmaraş. Stratified sampling was used to ensure a representative sample, and participants were selected from a school of health located in a district in the Central Anatolia Region of Türkiye. The selection process involved several stages to include participants with different levels of exposure to seismic events. The inclusion criteria required that participants had experienced the Southeast earthquake that occurred on February 6, 2023, in 10 provinces of Türkiye, agreed to participate in the study, and attended school during the study period. Exclusion criteria included voluntarily withdrawing from the study at any stage and not participating in individual interviews. Purposive sampling was used to select participants for qualitative, in-depth individual interviews. This approach aimed to identify individuals who could provide rich and detailed insights into their earthquake experiences. Participants were selected based on criteria such as their proximity to high-intensity earthquake zones, level of exposure to seismic events, and willingness to share their experiences. The study was completed with 39 students.

2.3. Data collection tools

For the quantitative part, the data were collected with the "Information Form" and "Scale for Determining the Level of Post-Earthquake Trauma" prepared by the researchers by reviewing the literature (12, 13). For the qualitative part of the data, a semi-structured "Interview Question Form" was used. In the information form used in the study, there are 11 questions to define the sociodemographic characteristics of student nurses (including age, gender, class, family type, family income level, and their status regarding the earthquake), and in the interview question form; there are 6 open-ended questions to define the experiences of student nurses during and after the earthquake (whether they made any preparations before the earthquake; the emotions they experienced during the earthquake; what they did and felt after the earthquake; the difficulties encountered after the earthquake; changes in their lives after the earthquake; opinions and experiences about preparing for a future earthquake).

2.4. Scale for determining the level of post-earthquake trauma

This scale was developed by Tankan and Kayri (2013) (14). The five-point Likert scale (1 = never; 5 = always) is intended to determine the level of post-earthquake trauma. The lowest score that can be obtained from the scale is 20, and the highest score is 100. The increase in scores obtained from the scale indicates that the number of individuals being affected by the earthquake also increases. The score range of 52,385±5,051 points indicates a threshold value at which individuals are traumatized. Above and below this threshold value indicate low and high levels of traumatization. The sub-dimensions of the scale are cognitive structure, behavioral problems, affect, excitement limitation, and sleep problems. The internal reliability coefficient (Cronbach's alpha) calculated for

all items of the Scale for Determining the Level of Post-Earthquake Trauma was found to be 0.87. The internal reliability coefficient of our study was found to be 0.81.

2.5. Data collection

The data were collected through face-to-face, in-depth interviews. The research was conducted between June 30 and August 16, 2023, with an in-depth individual interview method, which is one of the qualitative research methods, after conducting a quantitative questionnaire survey. The interview time with each student nurse took approximately 30-35 minutes to collect the data. The answers given by the students to the questions in the "Information Form" and semi-structured "Interview Question Form" (Table 1) were written down by the researchers and recorded with a voice recorder. The written documents were re-read by the nurse students, and participant confirmation was obtained. In the study, the interviews were conducted by two authors who were also academics and doctoral graduates. Both academics involved in the interviews were women and held PhD degrees at the time of the study. They had also participated in qualitative research courses multiple times and possessed course certificates attesting to their training in qualitative research methods.

The relationship between the researchers and the participants started before the study started, after the earthquake. The participants were nursing students who were severely affected by an earthquake in Kahramanmaraş.

Table 1. The Semi-Structured Interview Form.

Semi-structured interview questions
1. Can you tell us whether you made any preparations before the earthquake?
2. What were your feelings during the earthquake?
3. What did you do, and how did you feel after the earthquake?
4. Can you describe the difficulties you faced after the earthquake?
5. What changed in your life after the earthquake?
6. As a person who has experienced an earthquake, what are your views and experiences about preparing for a possible future earthquake?

2.6. Data analysis

In this study, the content analysis method was used in the data analysis process, which aims to define and explain the concepts and relationships obtained from the collected data (Başkale, 2016). The researchers initially conceptualized and logically organized the collected data to facilitate the identification of themes. Coding was performed by assigning labels to parts of the data, such as words, sentences, or paragraphs, after the data were subjected to content analysis. While the participants' data were coded according to the main themes, their perspectives and opinions on these main themes were coded as sub-themes. The codes and sub-themes were analyzed by creating categories, allowing the data to be organized and interpreted systematically. The content analysis approach used in this study facilitated a comprehensive examination of the data and enabled the identification of key concepts, relationships, and themes derived from the participants' experiences. This rigorous analysis process contributed to a deeper understanding of students' earthquake experiences by ensuring the credibility and reliability of the findings. The qualitative data were analyzed using the MAXQDA-20. Quantitative data were analyzed using the SPSS 22 (IBM Corp., Released 2014; IBM SPSS Statistics for Windows, version 22.0; Armonk, NY: IBM Corp.) package program. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to analyze the quantitative data.

2.7. Validity and reliability studies

To ensure reliability in qualitative research, an approach was used in which the participants were given written transcripts of the interview records and asked to review and confirm the accuracy of the opinions they conveyed (Başkale, 2016). This method aims to ensure internal validity and

reliability. In addition, to increase the consistency and reliability of the data, the researchers independently reviewed each form by consulting two experts who expressed their opinions on each question. In qualitative research, reliability is assessed through consensus, agreement, and disagreement. In this study, 80% consensus in expert opinions regarding the appropriateness of the content of the participant's responses to the questionnaires was considered sufficient for reliability. In particular, a 95% consensus was achieved between the two experts and the researchers regarding the content of the questions and answers, thus demonstrating the reliability of the questionnaire (Başkale, 2016). In addition, both of the researchers are certified and have taken qualitative research courses.

2.8. Ethical aspects of the research

Before collecting the study data, the approval of the Selçuk University Non-Interventional Clinical Research Ethics Committee (decision number 2023/12, 14.06.2023-E.514640) and Akşehir Kadir Yallagöz School of Health (24.03.2023-E.491949) and verbal and written informed consent were obtained from the student nurses. The confidentiality of the information and voice recordings used in the study was assured. In the study, the code names H1, H2, H3,..., and H39 were given to the questionnaires instead of the names of the participants. This study was conducted in accordance with the Good Clinical Practice and Reporting Standards in Qualitative Research of the Declaration of Helsinki.

3. RESULTS

It was found that 18 of the student nurses who participated in the study were in the 4th grade. Between the ages of 19 and 31, 33 of them lived in a nuclear family, and 24 of them had an income equal to their expenses (Table 2). In addition, although not specified in the table, it was found that 6 of the participants were physically injured in the earthquake, 30 of them had injuries or losses in their families, 12 of them had their houses damaged, and 22 of them needed psychological support after the earthquake.

Table 2. Sociodemographic Characteristics Of The Nursing Students (n = 39).

Code	Gender	Age	Classroom	Family type	Family Income Level
H1	Female	25	4th grade	Nuclear family	Income less than expenses
H2	Female	22	4th grade	Nuclear family	Income equal to expenditure
H3	Female	23	4th grade	Nuclear family	Income less than expenses
H4	Male	21	4th grade	Nuclear family	Income less than expenses
H5	Male	23	4th grade	Nuclear family	Income less than expenses
H6	Female	22	4th grade	Nuclear family	Income equal to expenditure
H7	Female	22	4th grade	Nuclear family	Income equal to expenditure
H8	Male	23	4th grade	Nuclear family	Income equal to expenditure
H9	Female	19	1st grade	Nuclear family	Income less than expenses
H10	Female	31	1st grade	Nuclear family	Income equal to expenditure
H11	Female	22	2nd grade	Extended family	Income equal to expenditure
H12	Female	20	1st grade	Nuclear family	Income equal to expenditure
H13	Female	22	3rd grade	Nuclear family	Income equal to expenditure
H14	Male	20	1st grade	Nuclear family	Income equal to expenditure
H15	Male	21	2nd grade	Nuclear family	Income less than expenses
H16	Male	23	4th grade	Nuclear family	Income less than expenses
H17	Male	19	1st grade	Nuclear family	Income equal to expenditure
H18	Male	23	4th grade	Nuclear family	Income equal to expenditure
H19	Female	21	2nd grade	Nuclear family	Income less than expenses
H20	Female	23	4th grade	Fragmented family	Income less than expenses
H21	Male	22	4th grade	Extended family	Income equal to expenditure
H22	Female	21	4th grade	Nuclear family	Income equal to expenditure
H23	Male	19	2nd grade	Nuclear family	Income less than expenses
H24	Female	20	1st grade	Nuclear family	Income equal to expenditure

H25	Female	21	4th grade	Nuclear family	Income equal to expenditure
H26	Male	23	2nd grade	Nuclear family	Income equal to expenditure
H27	Female	20	2nd grade	Nuclear family	Income less than expenses
H28	Female	22	4th grade	Nuclear family	Income less than expenses
H29	Female	22	1st grade	Nuclear family	Income equal to expenditure
H30	Male	21	3rd grade	Extended family	Income equal to expenditure
H31	Female	21	2nd grade	Nuclear family	Income equal to expenditure
H32	Female	22	4th grade	Nuclear family	Income less than expenses
H33	Male	22	1st grade	Nuclear family	Income equal to expenditure
H34	Male	21	3rd grade	Nuclear family	Income equal to expenditure
H35	Female	20	4th grade	Nuclear family	Income less than expenses
H36	Female	20	4th grade	Extended family	Income equal to expenditure
H37	Female	20	2nd grade	Nuclear family	Income equal to expenditure
H38	Male	20	1st grade	Nuclear family	Income equal to expenditure
H39	Female	20	2nd grade	Fragmented family	Income less than expenses
	Median Age 21.64±2.04 (Min: 19 Max: 31)				

In Table 3, 25 of the participants reported that death or loss situations were traumatic and psychologically painful events. When asked whether nurses have a role in helping people who feel psychological pain, 28 participants answered yes. The mean total score of the participants in the Scale for Determining the Level of Post-Earthquake Trauma was 62.97±10.99. The score range of 52,385±5,051 points on the scale indicates a threshold value at which individuals are traumatized. Above and below this threshold value indicate low and high levels of traumatization. It can be said that the individuals participating in the study were highly traumatized.

Table 3. Distribution of Student Nurses' Perspectives on Psychologically Painful Events and Mean Scores on the Scale for Determining the Level of Post-Earthquake Trauma (N = 39).

Student nurses' perspectives on psychologically painful events	**n**	**(%)**			
Traumatic, psychologically painful events according to student nurses					
Death/loss	25	64.1			
Harassment/rape	3	7.7			
Violence	2	5.1			
Epidemic disease	1	2.6			
Negative interpersonal relationships	1	2.6			
Life crises	7	17.9			
The nurse's role in helping with mental suffering					
Yes	28	71.8			
No	1	2.6			
Partially	10	25.6			
Distribution of mean scores on the scale for determining the level of post-earthquake trauma	**N**	**Min**	**Max**	**Mean**	**Standard Deviation**
Scale for Determining the Level of Post-Earthquake Trauma Total Score	39	32.00	81.00	62.97	10.99
Cognitive structure	39	6.00	17.00	13.12	2.93
Behavioral problems	39	4.00	16.00	11.43	2.68
Affective	39	7.00	17.00	12.94	2.41
Excitement limitation	39	8.00	21.00	15.74	3.20
Sleep problems	39	4.00	13.00	9.07	2.27

3.1 Thematic results

After the earthquake, 239 important statements were obtained from the narratives of 39 student nurses about the experience of facing trauma and pain as nursing students. As a result of in-depth interviews with student nurses, six themes and 12 sub-themes under the titles "Lack of

earthquake preparation," "Emotional reactions during the earthquake," "Actions taken after the earthquake," "Difficulties and difficulties," "Life changes," and "Changes in the perspective of an earthquake" are presented in Table 4.

Table 4. Themes and Sub-Themes.

Themes	Sub-Themes
1. Lack of earthquake preparedness	1.1. Lack of awareness or attention
2. Emotional reactions during an earthquake	2.1. Fear, Anxiety, Panic
	2.2. Despair and hopelessness
	2.3. Courage and Resilience
3. Actions taken after the earthquake	3.1. The Seeking Security and Shelter
	3.2. Communication and Contact with Loved Persons
	3.3. Emotional Support and Coping
4. Challenges and difficulties	4.1. Physiological challenges, Psychological challenges, Social challenges
	4.2. Financial challenges
5. Life changes	5.1. Change in Perspective and Priorities
6. Changes in perspective on earthquake	6.1. Building and Infrastructure Preparation
	6.2. Personal Preparedness and Safety Precautions

Theme 1: Lack of earthquake preparedness

In this theme, student nurses stated that they felt that they did not prepare for an earthquake in advance or did not think about the possibility of an earthquake.

Sub-theme 1.1: *Lack of awareness or attention*

Student nurses expressed shock and surprise at the severity of the earthquake and admitted that they had little knowledge about proper safety procedures or the importance of earthquake preparedness. This lack of awareness made them feel vulnerable and unprepared, and it increased their feelings of fear and anxiety during and after the event. The statements of some participants about these feelings are as follows:

- We had no preparation. Even if we had, I don't know if it would have worked. (H-18)
- We had no preparation for the earthquake. We were caught unprepared and did not realize how big the destruction would be. (H-22)
- We did not make any preparations because the possibility of an earthquake did not even cross anyone's mind. (H-25)

Theme 2: Emotional reactions during an earthquake

Student nurses described feeling fear, panic, and anxiety as the ground shook and the environment around them became chaotic and unpredictable. Many expressed feelings of helplessness, hopelessness, and vulnerability in the face of the power and unpredictability of the earthquake. Some participants also reported feelings of shock and disbelief, struggling to comprehend the magnitude of the event unfolding before them. Alongside these negative emotions, they reported expressions of courage and resilience, where individuals came together to support each other in the midst of the crisis. This theme was divided into three sub-themes: (a) fear, anxiety, and panic; (b) despair and hopelessness; and (c) courage and resilience.

Sub-theme 2.1. *Fear, Anxiety, Panic*

Student nurses vividly described the feeling of fear that accompanied the earthquake shaking. They stated that the fear, anxiety, and panic stemmed from the uncertainty of the situation, the potential for injury or harm, and the sudden disruption of a once-familiar environment. Some of the participants' statements are as follows:

- I thought I was going to die because the house was violently surrounded. The crying of the people around me, the shouting, the calls, the ambulance sounds, the lack of electricity, and having to wait in the street under the rain were some of the most difficult moments of my life. (H-17)
- Everyone was panicking, and I was shaking. I tried to run out of the building in fear, but I realized much later that I had injured my foot on the stairs while running away. (H-20)

Sub-theme 2.2. *Despair and hopelessness*

Student nurses expressed feelings of helplessness because they could not control or mitigate the impact of the earthquake while witnessing the destruction and chaos around them. This helplessness often triggers feelings of hopelessness. In the midst of the devastation, students felt hopelessness and helplessness due to the feeling of losing their homes, belongings, and even loved ones. The statements of some of the student nurses who participated in the research are as follows:

- Definitely, the most intense feeling I experienced was helplessness. There was nothing I could do; no one could help me. (H-1)
- I thought my house had collapsed on my head. Despite the devastating impact of the earthquake, not being able to do anything caused a feeling of helplessness and hopelessness in me. It was very scary. Helplessness brings great fear. (H-10)
- I was there when my family was under rubble. I have never felt so bad and helpless in my life. (H-39)

Sub-theme 2.3. *Courage and Resilience*

Student nurses reported that they came together to support each other during the earthquake and used expressions of courage and resilience. The statements of some of the student nurses participating in the study are as follows:

- During the earthquake, we tried to get out of the house somehow with my family, we stayed in the car for a while, in this process, we tried to help my relatives and my environment in whatever way we could. (H-12)
- I was awake at the time of the earthquake, the first thing I did was to wake up my family and people around me to save them, the most important thing in such situations is to remain courageous and cool-headed. (H-27)

Theme 3: Actions taken after the earthquake

Student nurses identified a variety of immediate actions aimed at ensuring their personal safety and the well-being of others after an earthquake. These actions included seeking shelter, tending to injuries, and assessing the extent of damage in their environment. Participants also emphasized the importance of reaching out to loved ones to confirm their safety and provide support. This theme is divided into three sub-themes: (a) seeking security and shelter, (b) communication and contact with loved persons, and (c) emotional support and coping.

Sub-theme 3.1. *Seeking security and shelter*

Students expressed that their immediate priority was to seek safety and shelter. They shared their experiences of quickly assessing the seriousness of the situation and taking swift action to protect themselves and others. They described seeking open spaces, moving away from potentially risky structures, and taking shelter in designated evacuation areas or emergency shelters. Here are the testimonies of some of the students:

- When we started staying in cars and village houses, we realized that the house and bed we were living in were a huge blessing. (H-4)

- We went to a village house, and there were 20 of us living in that house. We undercut each other in the crowd and played games with the children so that they would not be affected. (H-33)
- We went to Istanbul, we went to Ankara, we went back to Hatay, and finally, we found a house in Ankara. I had to go back to school. (H-1)

Sub-theme 3.2. *Communication and contact with loved persons*

Student nurses shared their experiences of immediately reaching out to family members, friends, and loved ones to ensure their safety and well-being. They described relying on various communication channels, such as phone calls, text messages, social media platforms, and hotlines, to communicate and provide reassurance. The statements of some participants are as follows:

- On the day of the earthquake, I was staying with my grandparents. I was constantly on the phone because I was far away from my family. I tried to reach them, and I was constantly talking to them. (H-6)
- I had my cell phone with me when the earthquake happened, and I texted emergency hotlines to help myself and my family. (H-12)
- Sub-theme 3.3. Emotional support and coping
- Student nurses stated that they had difficulty coping with their feelings about these events after the earthquake and that they tried to cope by helping their relatives or praying. The statements of some participants are as follows:
- We tried to get out of the house somehow, and we stayed in the car for a while. We had relatives around us who were trapped under the rubble or who died; we tried to help them, and I prayed constantly. (H-2)
- I volunteered for everything because I was feeling very bad. My family and my siblings were in a very bad situation. We couldn't even be happy that we were alive because we had suffered a lot of losses in the family. H-34)

Theme 4: Challenges and difficulties

In this theme, students stated that they experienced physical, psychological, social, and financial difficulties after the earthquake. This theme is divided into two sub-themes: (a) physiological, psychological, and social difficulties, and (b) financial difficulties.

Sub-theme 4.1. *Physiological challenges, Psychological challenges and Social Challenges*

Physiological challenges experienced by student nurses include earthquake-related injuries and health problems. Psychological challenges include a range of emotional reactions such as post-traumatic stress, anxiety, depression, and survivor's guilt. Students reported experiencing social challenges due to the loss of their homes, displacement, and disrupted social structures. Students described feelings of isolation, strained relationships, and difficulties in accessing basic needs and support networks. Some of the students' statements are as follows:

- Physiological challenges include our basic needs. I faced problems such as water, food, accommodation, and sleep problems. (H-5)
- After the earthquake, I started to feel like an earthquake was going to happen at any moment indoors because of the anxieties and aftershocks. Many of my friends and acquaintances died, so I felt guilty for being alive. I had bursts of anger. (H-15)
- Shelter was one of the main problems. The weather conditions were quite bad, and people had to stay outside. I think the difficulty in heating and meeting the need for a sink or

bathroom were the most important ones. During the first three days, we could not meet many of our needs because the roads deteriorated. (H-13)

- We felt vulnerable and defenseless because our house was damaged. Many of us had to live in a small space; we had many needs, and we were psychologically exhausted while trying to meet these needs. (H-27)

Sub-theme 4.2. *Financial challenges*

Students stated that they also experienced financial difficulties after the earthquake.

- Although our psychology was broken, we also had a lot of financial difficulties; we could not go home, and it was very costly to find a rental house in another city. (H-5)
- We were experiencing difficulties in every sense, but our money and everything else were also trapped under the cave-in. We waited for someone to help us financially. (H-12)
- We had financial difficulties. I can say that we faced more difficulties than we would normally experience because the earthquake happened right after my father passed away. (H-3)

Theme 5: Life changes

Student nurses shared narratives reflecting a fundamental change in their daily lives, relationships, and outlook on the future after the earthquake. The earthquake brought many challenges, including the loss of homes, possessions, and loved ones, and led to a deep sense of grief and turmoil. Students described the need to adapt to new living arrangements, navigate unfamiliar environments, and rebuild their lives from scratch. The earthquake catalyzed personal growth and transformation, prompting individuals to re-evaluate their priorities, reassess their values, and develop resilience in the face of adversity.

Sub-theme 5.1. *Change in perspective and priorities*

Student nurses shared that after the earthquake, their worldview changed profoundly and they reassessed their priorities. The experience of loss and vulnerability led individuals to reassess what was truly important in their lives. They defined a new value around the fragility of life, valuing relationships and cherishing moments of connection and support. Many participants emphasized a shift towards prioritizing the well-being of themselves and their loved ones over material possessions or societal expectations. Here is what some of the students had to say:

- Many things changed in my life after the earthquake. I realized much better the value of the things I had, but I never felt lucky to have them or grateful for them. The fact that we lost so many things in a matter of seconds that we could not realize how important and precious they were taught me this was a very painful experience. I learned that nothing belongs to us (not even our own lives). I learned that we should never hurt people for nothing. I started to think that life is too short and that no reason should justify this fight. Everything we have in our lives is a reason for us to be thankful. We should realize this and appreciate them. (H-3)
- I learned to embrace the people I love and that one day life might take them away from me. I learned to tolerate the people we love, no matter how tired or resentful we are, not to approach people with prejudice, and most importantly, that life is too short, so don't get too upset about anything. (H-11)
- Before the earthquake, we were making life miserable for ourselves by raising small troubles inside ourselves as if there was no death, but life is too short to grieve. A motto for myself: Get up, pick yourself up, set a goal, and live your life again. (H-28)

Theme 6: Changes in perspective on earthquake

Student nurses shared profound changes in their understanding and perceptions of earthquakes at both the individual and collective levels. The earthquake experience shattered preconceived notions of safety and stability, and they expressed a sense of vulnerability in the face of natural disasters. This shift in perspective has led to increased preparedness and a proactive approach to earthquake safety measures such as emergency planning, retrofitting of buildings, and participation in community resilience initiatives. This theme is divided into two sub-themes: (a) building and infrastructure preparation, and (b) personal preparedness and safety precautions.

Sub-theme 6.1. *Building and infrastructure preparation*

Students shared their experiences and insights on the importance of proactive measures to improve the resilience of buildings and infrastructure. The earthquake served as a wake-up call, highlighting the vulnerabilities and deficiencies in existing structures. Students emphasized the need for comprehensive building codes, engineering standards, and retrofitting initiatives to ensure the safety and resilience of buildings in seismic zones. Some of the participants' statements are as follows:

- In the future, when buying a house, I think it is necessary to investigate the location of the house, whether it is earthquake-resistant or not, and the quality and number of materials used in the construction of the house, not the external or internal beauty of the house. (H-23)
- Before a building is constructed, it is important to check the strength of the building, soil, and ground control (is it swampy?). rock analysis and construction), horizontal architecture should be adopted instead of multi-story buildings, and building inspections should be carried out at regular intervals. In addition, earthquake training should be given to citizens, and these trainings should be organized regularly. In addition, disaster management courses for nursing students and health professionals should be added to the compulsory curriculum in universities and certified. (H-4)

Sub-theme 6.2. *Personal preparedness and safety precautions*

Students shared their experiences and views on the importance of individual preparation and safety measures in the face of earthquakes. The earthquake prompted individuals to take steps for personal safety to protect themselves and their loved ones. Students described activities such as creating emergency kits and participating in first aid and disaster response training.

- First of all, whether we are in an earthquake zone or not, we should definitely have an earthquake kit handy. We should put the earthquake kit in a place where we can reach it; we should not panic; and we should never try to get out because there have been so many people who have been trapped in gaps and died. We should immediately form a life triangle at the nearest place. (H-6)
- For me, earthquake preparedness can include things like making an emergency plan, storing supplies like water and non-perishable food, securing furniture and objects that could fall or cause injury, and knowing what to do during and after an earthquake. (H-37)

4. DISCUSSION

In this study, the post-earthquake trauma level of nursing students who were earthquake survivors was determined, and the emotions, difficulties, and coping methods they experienced during and after the earthquake were examined. The findings of this study revealed that the mean total score of the Scale for Determining the Level of Post-Earthquake Trauma showed that the students experienced a high level of trauma after the earthquake. This coincides with the study conducted after the Kahramanmaraş earthquake, which covered ten provinces of Türkiye and showed that university students also experienced high levels of trauma (11). Chen et al. (2009) also emphasized that anxiety and depression are common among nursing students in earthquake-affected regions and that a lack of

information about the earthquake and low social support contribute to these problems (15). In addition, in a separate study focusing on nursing students, it was found that those with previous earthquake experience exhibited higher levels of trauma before receiving earthquake training (16). Collectively, these findings highlight the profound impact of earthquakes on students' psychological well-being and highlight the urgent need for targeted interventions and support systems to address their post-earthquake trauma. The results underscore the importance of implementing comprehensive earthquake education programs and providing psychological support to reduce the long-term effects of trauma among students.

The first theme identified in our study, lack of earthquake preparedness, was addressed with the sub-theme of lack of awareness or lack of consideration. When examined in the literature, it is stated that there are similar results to our findings: nursing students have a lack of earthquake preparedness and awareness (17, 18). The results of this study suggest the necessity of disaster preparedness education and training and the importance of transforming it into behavior to improve nursing students' awareness and evaluation of earthquake risks.

The second theme identified in our study, emotional reactions during the earthquake, revealed the sub-themes of fear, anxiety, panic, helplessness, hopelessness, courage, and resilience. These findings are consistent with similar studies conducted with nursing students showing that they also experience psychological distress and emotional reactions during seismic events (17, 19). Trip (2018) found that higher education nursing students experienced disruptions in their studies and increased mental health problems after a serious earthquake, emphasizing the need to build sustainable learning and resilience(19). Similarly, Chen (2009) reported that nursing students in earthquake-affected regions experienced anxiety and depression and emphasized the importance of adequate social support (15). In particular, Longo et al. (2022) found that nursing students lacked personal disaster preparedness and exhibited behaviors that did not prioritize self-protection during earthquakes (17). These findings highlight the urgent need for support and interventions targeting nursing students' emotional well-being and preparedness for earthquake situations. The results highlight the importance of developing educational programs that address emotional coping strategies, increase awareness of personal preparedness measures, and promote a culture of self-protection among nursing students. By addressing these concerns, educational institutions can better equip nursing students to overcome emotional difficulties and support them in seeking psychological counseling for emotional singularities experienced during and after seismic events.

The third theme identified in our study focused on the measures taken after the earthquake, with sub-themes such as seeking safety and shelter, communication and contact with loved ones, and emotional support and coping. These findings are consistent with studies conducted with nursing students showing that their priority after the earthquake was to ensure their safety and find shelter (11, 20). After providing a safe environment, nursing students, similar to our findings, prioritize communication and contact with their loved ones and seek emotional support (13, 16). Nursing students in earthquake-affected regions experience high levels of anxiety and depression, and inadequate social support exacerbates these problems (15). Affected people usually cope by seeking social support, problem-solving, and using self-control (21, 22). Komatsu's (2020) investigation of a special disaster nursing program for nursing students who experienced the Great East Japan Earthquake showed that such training helped them develop effective coping strategies to face and overcome challenges (16). Similarly, Sumiyama's (2020) study on the volunteer activities of nursing graduate students following the Kumamoto earthquake emphasized the importance of pre-disaster networks, comprehensive needs assessment, and mental health support for healthcare workers (23). These findings underline the importance of providing targeted interventions and support systems for nursing students after the earthquake. By implementing disaster nursing education programs and establishing robust pre-disaster networks, nursing students can be better equipped to overcome challenges and provide effective care in post-earthquake situations. These findings emphasize the

importance of meeting the immediate needs of nursing students in post-earthquake scenarios. Providing access to safe spaces, facilitating communication channels, and offering emotional support systems may help nursing students navigate more effectively after an earthquake. These findings highlight the importance of incorporating disaster preparedness and response education into nursing education programs, equipping students with the knowledge and skills necessary to take appropriate precautions and provide support during and after seismic events.

The fourth theme identified in our study focused on the difficulties and challenges experienced by individuals after the earthquake, covering physiological, psychological, social, and financial aspects. The existing literature largely examines the post-earthquake experiences of nurses (24, 25). In other studies, Yıldız et al. (2023) emphasized the need for mental health services(26), while Kocoğlu et al. (2023) drew attention to higher trauma levels in female students (11). Çağıran et al. (2023) provide clinical information, including the most common injuries and the importance of epidemiological studies (27). Collectively, these studies underline the need for comprehensive support, including mental health care, social support, and financial assistance, for individuals, especially university students, after earthquakes and show similar characteristics to our study. Focusing on the difficulties experienced by students after the earthquake and providing solutions may help reduce their trauma levels.

The fifth theme identified in this study is the theme of life changes. It was addressed with the sub-theme of change in perspectives and priorities. These findings are consistent with similar studies conducted with student nurses showing that they also experienced significant changes in various aspects of their lives (16, 21). Komatsu's (2020) study of nursing students who participated in a special disaster nursing program following the Great East Japan Earthquake revealed that these students experienced transformative changes in their thoughts and behaviors. The students reported that their awareness of personal development increased and their nursing knowledge deepened as a result of their experiences(16). These findings underline the profound impact that earthquakes can have on individuals, especially student nurses. The earthquake experience acts as a catalyst for personal and professional development, prompting individuals to reassess their perspectives and priorities. This highlights the importance of including disaster nursing education and training programs that not only meet the immediate needs of individuals but also facilitate long-term personal and professional development.

The sixth theme identified in this study focuses on the change in earthquake perspective, with the sub-themes of building and infrastructure preparation and personal preparation and safety measures. Existing studies conducted with nursing students reveal that students' levels of earthquake preparedness and knowledge of self-protection actions are low (17-19). In parallel with these findings, in our study, it was revealed that students did not prepare earthquake bags in advance, and their level of building infrastructure preparedness was inadequate. However, a significant change in perspective occurred after the earthquake. The seismic event led to a transformative change in students' perceptions of earthquake preparedness and safety measures. This finding highlights the potential for earthquakes to serve as critical wake-up calls that force individuals, including nursing students, to realize the importance of proactive preparedness and safety practices. It underlines the need for educational initiatives that focus on increasing earthquake awareness, preparedness, and self-protection knowledge and skills among nursing students. By implementing comprehensive educational programs and providing resources for improving building infrastructure, we can empower nursing students and the wider community to take proactive measures to reduce the impact of future earthquakes.

5. CONCLUSION

In conclusion, this study sheds light on nursing students' experiences, challenges, and coping strategies after the earthquake. The findings reveal the profound impact of seismic events on various aspects of students' lives, including their psychological well-being, level of preparedness, coping mechanisms, and outlook on life. The results underline the urgent need for targeted interventions and support systems to address the post-earthquake trauma experienced by nursing students. It is crucial to implement comprehensive earthquake education programs that increase awareness, preparedness, and self-protection knowledge among nursing students. Furthermore, providing psychological support and fostering a culture of personal preparedness are essential to mitigating the long-term effects of trauma and promoting emotional well-being among students. The study also emphasizes the importance of meeting the immediate needs of nursing students after the earthquake, such as ensuring their safety, facilitating their communication with their loved ones, and offering emotional support. Disaster nursing education programs, coupled with pre-disaster networks and mental health support, play a vital role in equipping nursing students with the skills, flexibility, and resources necessary to meet the challenges inherent in post-earthquake scenarios. By addressing these concerns, educational institutions and health systems can effectively support nursing students in their caregiving roles and protect their own and other individuals' well-being in the face of future seismic events.

Limitations

The study on the experiences of nursing students who were earthquake survivors had several limitations. The findings may not be widely applicable beyond the specific context of the earthquake in Türkiye and the population of nursing students. The study also relied on self-report measures and individual interpretation. The retrospective recall of experiences and emotions may have been influenced by the passage of time and trauma's impact on memory.

Declaration of conflicting interests: None

BM: Conceptualization, Methodology, Software, Data curation, Writing- Original draft preparation, Visualization, Investigation, Supervision, Validation, Writing- Reviewing and Editing, Project administration. **AYK:** Conceptualization, Methodology, Software, Data curation, Writing- Original draft preparation, Visualization, Investigation, Formal Analysis, Supervision, Validation, Writing- Reviewing and Editing.

REFERENCES

1. Watkins, L.E., Sprang, K.R., Rothbaum, B.O. (2018). Treating PTSD: A review of evidence-based psychotherapy interventions. Frontiers in behavioral neuroscience, 12, 258.
2. Liang, Y., Cheng, J., Ruzek, J.I., Liu, Z. (2019). Posttraumatic stress disorder following the 2008 Wenchuan earthquake: A 10-year systematic review among highly exposed populations in China. Journal of affective disorders, 243, 327-39.
3. Tanrıkulu, A.B., Kaya, H., Örüm, M.H., Akyıldırım, S. (2023). Prevalence and determinants of post-traumatic stress disorder in patients with schizophrenia 2 years after an earthquake in Turkey. The International Journal of Psychiatry in Medicine, 00912174231180467.
4. Sharma, R., Tamang, N.D., Bhattarai, G. (2023). Assessing Prevalence of Post-Traumatic Stress Disorder Symptoms Following the 2015 Earthquake in Langtang, Nepal. BJPsych Open, 9(1), 71-P.
5. Karamustafalıoğlu, O.K., Fostick, L., Çevik, M., Zukerman, G., Tankaya, O., Güveli, M., et al. (2023). Ten-year follow-up of earthquake survivors: long-term study on the course of PTSD following a natural disaster. The Journal of clinical psychiatry, 84(2), 45763.
6. Karamustafalioglu, O. (2004). Evaluation of the effects of psychological trauma after an earthquake in Istanbul. Oral Presentation at 3rd Trauma Meetings, Istanbul.

7. Utkucu, M., Uzunca, F., Durmuş, H., Nalbant, S., Sert, S. (2023). The 2023 Pazarcik (Mw= 7.8) and Elbistan (Mw= 7.6), Kahramanmaraş Earthquakes in The Southeast Turkey. Disaster Management Application and Research Center and Department of Geophysics, Sakarya University, 22.
8. Öztekin, S.D., Larson, E.E., Yüksel, S., Altun Uğraş, G. (2015). Undergraduate nursing students' perceptions about disaster preparedness and response in Istanbul, Turkey, and Miyazaki, Japan: A cross-sectional study. Japan Journal of Nursing Science, 12(2), 145-53.
9. Ceyhan, E., Ceyhan, A.A. (2007). Earthquake survivors' quality of life and academic achievement six years after the earthquakes in Marmara, Turkey. Disasters, 31(4), 516-29.
10. Seren, A.K.H., Dikeç, G. (2023). The earthquakes in Turkey and their effects on nursing and community health. International nursing review, 70(3), 262-5.
11. Kocoglu, E., Demir, F.B., Öteles, Ü.U., Özeren, E. (2023). Post-Earthquake Trauma Levels of University Students Evaluation: Example of 6 February Kahramanmaras Earthquake. Higher Education Studies, 13(2), 121-7.
12. Kaplan, T., Keser, İ. (2021). The Relationship Between Nursing Students' Beliefs About the Transformative Power of Pain and Their Empathy Skills. Journal of Academic Research in Nursing (JAREN), 7(3).
13. Sönmez, M.O., Nazik, F., Pehlivan, E. (2019). Prevalence of post-traumatic stress disorder in university students after the Van earthquake. Peer Reviewed International, 23 (3), 957-972.
14. Tanhan, F., Kayri, M. (2013). Validity and reliability study of the post-earthquake trauma level determination scale. Educational Sciences in Theory and Practice, 13(2), 1013-25.
15. Chen, H., Feng, L., Shen, W.W., Guo, H.X. (2009). A study on the psychological state of nurse-students of a university in affected areas of Wenchuan earthquake. Hu li za zhi The journal of nursing, 56(5), 30-8.
16. Komatsu, M. (2020). The Results of the Japan-US Joint Disaster Nursing Training Program for nursing students with experience of the Great East Japan Earthquake. Journal of allied health sciences, 11(2), 108-120.
17. Longo, B.M. (2022). Earthquake preparedness and knowledge of recommended self-protective actions: A survey of nursing students. Disaster medicine and public health preparedness, 16(2), 495-9.
18. Rahayu, R., Khoiriyati, A. (2019). Earthquake Preparedness Among Nursing Students. IJNP (Indonesian Journal of Nursing Practices), 3(2), 67-74.
19. Trip, H., Tabakakis, K., Maskill, V., Richardson, S., Dolan, B., Josland, H., et al. (2018). Psychological health and resilience: the impact of significant earthquake events on tertiary level professional students. A cross-sectional study. Contemporary nurse, 54(3), 319-32.
20. Duruel, M. (2023). The Role of Non-Governmental Organizations in Disaster Management: February 6 Earthquake Hatay Example. International Journal of Political Studies, 9(2), 1-18.
21. Li, Y., Turale, S., Stone, T.E., Petrini, M. (2015). A grounded theory study of 'turning into a strong nurse': earthquake experiences and perspectives on disaster nursing education. Nurse education today, 35(9), e43-e9.
22. Nukui, H., Midorikawa, S., Murakami, M., Maeda, M., Ohtsuru, A. (2018). Mental health of nurses after the Fukushima complex disaster: a narrative review. Journal of radiation research, 59(suppl_2), ii108-ii13.
23. Sumıyama, Y., Yamauchı, M., Fuji, N., Aoyama, M., Kobayashi, C., Ikeda, T. (2020). Volunteer activities and lessons learned by graduate nursing students following the 2016 Kumamoto earthquake. Health Emergency and Disaster Nursing, 7(1), 63-8.
24. Johal, S.S., Mounsey, Z., Brannelly, P., Johnston, D.M. (2016). Nurse perspectives on the practical, emotional, and professional impacts of living and working in post-earthquake Canterbury, New Zealand. Prehospital and Disaster Medicine, 31(1), 10-6.
25. Moradi, K., Abdi, A., Valiee, S., Rezaei, S.A. (2020). Nurses' experience of providing ethical care following an earthquake: a phenomenological study. Nursing ethics, 27(4), 911-23.
26. Yıldız, M.İ., Başterzi, A.D., Yıldırım, E.A., Yüksel, Ş., Aker, A.T., Semerci, B., et al. (2023). Preventive and therapeutic mental health care after the earthquake-expert opinion from the psychiatric association of Turkey 2.
27. Çağıran, Z., Sertöz, N., Karaman, S., Özen, D., Demirkoparan, M., Uyar, M., et al. (2023). Our clinical experiences in the earthquake victims who came to our university after the 2020 Aegean Sea earthquake during the COVID-19 pandemic. Turkish Journal of Trauma & Emergency Surgery, 29(3), 310.