

Research Article -Araştırma Makalesi

DOI; 10.54409/hod.1587249

DISASTER TRIAGE MANAGEMENT EXPERIENCES OF HEALTH PROFESSIONALS, 2023 KAHRAMANMARAS/TURKIYE EARTHQUAKE EXAMPLE

 Barış ÖZDERE¹  Evin KORKMAZ²  Hatice AZİZOĞLU³  Fatma ETİ ASLAN⁴

ABSTRACT

Objective: This study was conducted to examine the disaster triage management experiences of health professionals affiliated with the National Medical Rescue Team during the earthquake centered in Kahramanmaraş/TURKIYE on 06.02.2023.

Materials and Methods: The present study is designed according to qualitative research principles. Interviews that lasted 20-40 minutes were administered face-to-face. The data were transcribed by the experts and MAXQDA Analytics Pro (24.6.0) 2024 software was used to identify codes and themes.

Results: The study identified six (6) main themes and a total of twenty-three (23) sub-themes. The main themes are: 'first medical intervention for victims trapped under rubble', 'emotions experienced', 'triage methods', 'reasons for not being able to triage', 'problems encountered' and 'recommendations'. The findings from the in-depth examination of the participants' experiences were discussed in the light of the literature.

Conclusions: The earthquake affected a broad area, and coordination problems were observed, which hindered the implementation of medical triage. Furthermore, it was concluded that all health personnel should receive training on disaster response, and that a practicable medical triage system needs to be developed for such major earthquakes.

Keywords: Disaster Triage, Earthquake Response, Health Care

¹Corresponding Author /Sorumlu Yazar, Öğr. Gör., Muş Alparslan Üniversitesi, , Türkiye, b.ozdere6565@gmail.com

²Dr. Öğr. Üyesi, Bahçeşehir Üniversitesi Sağlık Bilimleri Fakültesi, İstanbul, Türkiye. dr.evinkorkmaz@gmail.com

³Dr. Öğr. Üyesi, Van Yüzüncü Yıl Üniversitesi, Sağlık Bilimleri Fakültesi, Van, Türkiye. haticeazizoglu@yyu.edu.tr

⁴Prof. Dr., Bahçeşehir Üniversitesi Sağlık Bilimleri Fakültesi, İstanbul, Türkiye. fatmaetiaslan@gmail.com

Makale Geliş Tarihi/Submission Date; 18.11.2024

Kabul Tarihi/ Accepted Date; 13.04.2025

Çalışma için, Van Yüzüncü Yıl Üniversitesi Girişimsel Olmayan Araştırmalar Etik Kurulu tarafından (11.08.2023 tarihli ve 2023/08-03 sayılı karar) etik onay alınmıştır.

SAĞLIK ÇALIŞANLARININ AFET TRİYAJ YÖNETİMİ DENEYİMLERİ, 2023 KAHRAMANMARAŞ/TÜRKİYE DEPREMİ ÖRNEĞİ

ÖZ

Amaç: Bu çalışma 06.02.2023 tarihinde Kahramanmaraş/TÜRKİYE merkezli meydana gelen depremde Ulusal Medikal Kurtarma Ekibine bağlı sağlık çalışanlarının afet triyaj yönetimi deneyimlerini incelemek amacıyla yapılmıştır.

Gereç ve Yöntemler: Bu çalışma nitel araştırma ilkelerine göre tasarlanmıştır. Yüz yüze 20-40 dakika süren görüşmeler yapılmıştır. Veriler uzmanlar tarafından yazıya dökülmüş, kod ve temaları belirlemek için MAXQDA Analytics Pro (24.6.0) 2024 yazılımı kullanılmıştır.

Bulgular: Çalışmada altı (6) ana tema ve toplam yirmi üç (23) alt tema ortaya çıkmıştır. Ana temaları: “enkaz altında kalan kazazedelere ilk tıbbi müdahale”, “yaşanan duygular”, “triyaj yöntemleri”, “triyaj yapamama nedenleri”, “karşılaşılan sorunlar” ve “öneriler” oluşturdu. Katılımcı deneyimlerinin derinlemesine incelenmesi sonucunda elde edilen bulgular literatür ışığında tartışıldı.

Sonuçlar: Deprem geniş bir alanı etkilemiş ve tıbbi triyajın uygulanmasını engelleyen koordinasyon sorunları gözlemlenmiştir. Ayrıca tüm sağlık personelinin afet müdahalesi konusunda eğitilmesi ve bu tür büyük depremler için uygulanabilir bir tıbbi triyaj sisteminin geliştirilmesi gerektiği sonucuna varılmıştır.

Anahtar Kelimeler: Afet Triyajı, Depreme Müdahale, Sağlık Hizmetleri

INTRODUCTION

Disasters impact various economic, social, and political aspects of individuals and communities, resulting in death, disability, financial loss, and a decline in quality of life (Holla et al., 2018; Perry, 2018). Disasters are classified into two categories by EM-DAT (The international disaster database) in the General Classification: Natural Disasters (earthquakes, droughts, landslides, fog, avalanches, floods, etc.) and Technological Disasters (industrial accidents, transportation accidents, radiation leaks, etc.) (EM-DAT, 2023).

National governments, the International Federation of Red Cross and Red Crescent Societies, United Nations agencies, and Red Crescent Associations are among the various sources contributing to the EM-DAT. According to Usta (2023), in 2022, EM-DAT recorded 387 natural disasters worldwide, resulting in 30,704 deaths and affecting 185 million people. The economic losses amounted to approximately 223.8 billion USD. In Türkiye, disasters over the past 25 years

have resulted in 72,843 fatalities, with 70,091 of these deaths due to an earthquake, a natural disaster (EM-DAT, 2023). While in 2015, the percentage of earthquake fatalities among other disasters was 65% (Çelebi & Uçku, 2015), this rate increased to 92% with the recent Kahramanmaraş/TURKIYE earthquake (EM-DAT, 2023).

The insufficiency of available resources during major earthquakes necessitates prioritizing healthcare service delivery (Demirci, 2022). When a devastating earthquake occurs, the classification of injured with a high probability of fatality, prioritizing those with life-threatening injuries to distribute limited health resources rationally, is essential for optimizing survival rates and minimizing disability levels through triage (Peng & Hu, 2021). Triage becomes an unavoidable rescue strategy in scenarios with many injured, insufficient professional human resources, and inadequate medical supplies/equipment (Bazyar et al., 2019). It was argued that such insufficiencies often create a chaotic environment during earthquakes (Demirci, 2022). This characteristic distinguishes earthquake triage from the triage applied in emergency rooms, where not every patient has access to medical care and treatment.

In Türkiye, according to the Disaster Management Regulation, the National Medical Rescue Teams (NMRT) are established under the Emergency Health Services Unit to conduct medical rescue, transportation, and operate mobile hospitals in potential domestic and international disasters and emergencies. The regulation also emphasizes the necessity of applying triage and using triage cards to sustain life as much as possible in disasters such as earthquakes (Ministry of Health of Türkiye, 2021). The present study was planned to examine the disaster triage management experiences of health professionals.

1. MATERIAL AND METHODS

This research, a phenomenological study, was conducted between August 2023 and February 2024. The sample was selected through snowball sampling. The participants interviewed via this sampling method guided the subsequent participants forming the sample. The research concluded with 6 participants when data saturation was achieved. Health professionals who agreed to participate were all over 18 years old, had at least six months of work experience, had applied triage to earthquake victims in areas affected by the earthquake centered in Kahramanmaraş, and were directly involved in providing first and emergency aid as volunteers for the National Medical Rescue Teams (NMRT) in the province of Van.

Ethical approval for the study was received by the Non-Interventional Ethics Committee of Van Yüzüncü Yıl University under the decision number 2023/08-03 dated 11.08.2023, and institutional approval was obtained from the Van Provincial Health Directorate before the commencement of the study. The participants were sent a volunteer informed consent form in advance, and after obtaining their permissions, the study began. Participant information was kept confidential, and the participants were assigned code names P1, P2, P3, P4, P5, and P6.

Data for the study were collected through online and face-to-face interviews with each participant individually. Before starting the interview, the participants were informed about the study and the recording process, and verbal consent was obtained along with their demographic characteristics using a participant identification form. In this qualitative study, researchers, trained in qualitative methods, directed questions supported by literature to ensure in-depth interviews, and additional questions were posed by researchers to facilitate the sharing of the participants' experiences (Canatan, 2020; Farokhzadian, et al., 2024; Ozkan & Ikizceli, 2023). In this interview form, which was developed based on the literature, questions were posed regarding the triage method applied during the earthquake, the implementation of the classification system for casualty rescue, the management of the crisis process during intervention, and the prioritization in patient rescue, among others. Participants were requested to share their experiences in response to these inquiries. The duration of the interviews ranged from 20 to 40 minutes. In this study, more than one interview was conducted with the participants and iterations of the interviews were planned to ensure that the participants' experiences were analysed in depth.

The collected data were subjected to various analytical processes such as descriptive and content analysis. This allowed the researchers to gain in-depth insights from the interviews. Data were analyzed and the participants' audio recordings were transcribed verbatim. The transcribed interview texts were read by the researchers separately and then together several times to gain an overall impression. The responses to the semi-structured questionnaire were coded according to their purpose. The researchers compared and classified different codes according to their differences and similarities. The responses were grouped under the identified themes and evaluated using the content analysis method. Descriptive analysis highlighted differences in the participants' demographic characteristics, while content analysis focused on data collected from the participants; codes were derived from frequently repeated events and phenomena that the participants emphasized frequently. Codes were categorized into themes using the MAXQDA

Analytics Pro (24.6.0) 2024 software. The reporting of this study was guided by the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong, et al. 2007).

Validity and reliability

To enhance the transferability of this study, the researchers provided a comprehensive description of the research methodology, participant selection criteria, and data collection and analysis procedures. The coding process was conducted independently by two researchers. Subsequently, discrepancies between the coders were discussed, and a consensus was reached. Upon completion of each interview, the researchers presented the health worker with a concise summary and obtained verification of the accuracy of the information recorded in relation to their statements.

2. RESULTS

It was determined that the age of the participants in the study was 33.3, years of professional experience was 11.6, years of NMRT experience was 4.8, %50 were women, first emergency aid/triage training was received in all departments and they had previously been assigned to a disaster area (Table 1). The study identified six (6) main themes and a total of twenty-three (23) sub-themes. The main themes are: 'first medical intervention for victims trapped under rubble', 'emotions experienced', 'triage methods', 'reasons for not being able to triage', 'problems encountered' and 'recommendations'.

Table 1. Participants' Demographic Information						
Demographic data	P1	P2	P3	P4	P5	P6
Gender	Female	Female	Female	Male	Male	Male
Age	35	29	29	33	40	34
Profession	Nurse	Nurse	Nurse	Nurse	Health officer	Emergency care technician
Years of professional experience	13	12	9	10	16	10

Years of professional experience at NMRT	5	4	3	3	7	7
Institution/Department You Work For	Family Health Center	Training And Research Hospital	Training And Research Hospital	Training And Research Hospital	NMRT	NMRT
Have You Previously Worked in a Disaster Zone?	Yes	Yes	Yes	Yes	Yes	Yes
How Many Days Did You Work in the Earthquake Zone?	11 days	18 days	20 days	20 days	21 days	24 days

Main Theme 1: Initial Interventions For Victims Under Debris

When looking at the common statements of health professionals who served in the earthquake zones under the theme of Initial Interventions for Victims under Debris, they expressed that due to the vast area affected by the earthquake, triage could not be effectively carried out, they divided into groups, and this way they could reach more areas of debris and provide medical treatment. They have stated that they conducted work specifically aimed at preventing crush syndrome, which is often seen in disasters. Some participants shared their experiences, saying:

P1: *“regardless of the medical triage color, we were ready to intervene in all areas of debris where search and rescue teams received signals with devices or other methods. If the disaster victim was in an accessible place, we would immediately establish an intravenous route and provide fluid support. We particularly prioritized treatment for patients at risk of developing crush syndrome.”*

P4: *“there were some casualties with an entrapped foot or other body parts, and we established an intravenous route and provided fluid support to everyone we could reach. The aim was to protect the patients from crush syndrome.”*

P5: *“As I said, crush syndrome can be fatal if not intervened. As soon as we reached the patient under the debris, we immediately started treatment with isotonic solution after establishing an intravenous route. As soon as we reached them, we applied cervical collars to prevent neck trauma. Then we constantly monitored vital signs like blood glucose, blood pressure, pulse, and*

oxygen saturation. We observed their urine output situations and tried to provide treatment accordingly. After that, as I said, the transfers were made."

Main Theme 2: Emotions Experienced

The theme of Emotions Experienced comprises the thoughts of health professionals working during the earthquake; feelings of helplessness, sadness, remaining composed, altruism, not overcoming the shock of the event, and trying to be patient (Figure 1).

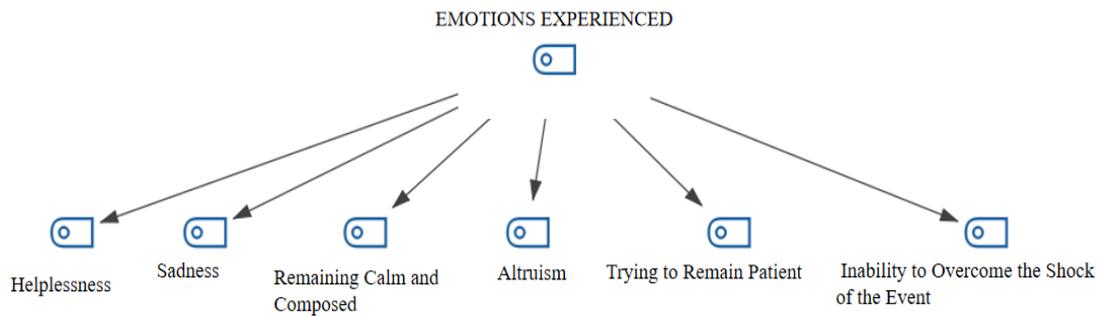


Figure 1. Main Theme of Experienced Emotions and Subthemes

Subtheme 1: Helplessness

The participants expressed feeling helpless in the face of the magnitude of the event. For instance, P3 stated, "You are in a vast area, and every building is crying for help. You hear voices from everywhere. 'Please help me, please help me.' You must choose among them because there are only a few of you and you can only help a few. That's the extent of our capacity. Among ourselves, we tried to reach the people closest to us... We reached a man who had lost his wife and children. He was aware of his loss and did not want to leave the debris." Meanwhile, P5 stated, "Clearly we entered many debris sites, and if there was a trapped person, we would go in, administer fluids, and then wait for the rescue teams. I had several such patients. I would go down, administer their IV fluids. I talked to them a bit to provide psychological comfort, then I had to go back up. Especially when dealing with children trapped under the debris, I would think of my own children. (cries as she recalls)." P6 noted, "We waited about 16 hours at one debris site, it was a very tight spot but somehow, I managed to get in. There was a 4-year-old child. Only the child's left arm was trapped under the debris. Yes, his body was outside, but it wasn't

easy to extract him. People thought it was easy, but it wasn't. After a total of 4 hours of effort, we rescued him. His parents had died trying to protect him with their hands. This incident greatly affected me."

Subtheme 2: Sadness

The participants reported experiencing intense feelings of sadness. For example, P1 remarked, *"There was a young girl there who had lost her mother and all of her father's family. Her calm attitude deeply affected me. She likely had not yet overcome the shock of the event."* P2 shared, *"On the third day of our assignment in the earthquake zone,her husband having died beside her. The first thing she asked when she was rescued was whether her husband had been taken out before her.But her first question upon being rescued was about her husband, about her children. I couldn't say anything at that moment and merely suggested that he had been taken to the hospital before her. I'm not sure if that was the right thing to do."* P4 explained, *"There was a child we rescued from the debris. His parents were left behind in the rubble. After pulling him out, he clung to me, and I couldn't let go; later his cousin came to us, but I couldn't leave him—he was so frightened that I ended up taking him to the hospital myself. These events deeply saddened me."* P5 stated, *"Seeing small children really affects you. We really had some emotional moments there, both my colleagues and I."*

Subtheme 3: Remaining Calm and Composed

All participants expressed that their experience in disasters prior to the mentioned earthquake allowed them to remain calm and composed. In this context, P1 stated, *"I focused on my job, perhaps due to the composure given by the experiences I've had up to this point—I'm not sure."* P2 explained, *"At that moment, the only thing on our minds was how even the slightest help from us could impact these injured people, those who had lost their relatives, and those whose cities were destroyed. Sometimes, we managed to rescue dozens of people from a building, but sadly, sometimes not a single person survived from buildings housing 120 individuals. It was only when we returned to our normal lives afterward that I truly understood the magnitude of the disaster we were in. Because nothing is normal there, and we were unaware of everything."*

Subtheme 4: Altruism

The participants noted that nearly everyone working in the disaster area displayed altruistic behaviors and acted accordingly. P1 said, *"I have friends who go under the debris risking their lives. At that moment, they don't think about anything. You know, what if there's an aftershock? They don't think, 'I'll stay here, stay in the debris, die.'" P5 commented, "Frankly, we entered many debris sites." P4 recounted, "There was a child we rescued from the debris. After pulling him out, he clung to me, and I couldn't let go—he was so frightened... I took him to the hospital myself." P3 explained, "We tried our best to help as much as we could, to intervene as much as we could, with all our strength." These statements highlight the selfless and committed attitudes of the responders in the face of catastrophic conditions.*

Subtheme 5: Inability to Overcome the Shock of the Event

Despite their experience in disaster response, the participants indicated that they were affected after the initial intervention phase. For instance, P2 said, *"It was a very different psychological state... When we returned to our normal lives afterward, that's when I truly understood the magnitude of the disaster we were in. Nothing was normal there, and we were unaware of everything." P4 mentioned, "There was hardly a building that wasn't damaged or destroyed."*

Subtheme 6: Trying to Remain Patient

The participants expressed that they tried to remain patient during the intervention. P2 remarked, *"I tried to do everything I could, at peace with my conscience." P3 noted, "We tried to be patient, to stand by them. We made efforts to work in coordination with rescue teams and other teams."*

Main Theme 3: Triage Methods

While generally stating that triage methods were ineffective, the participants formed thoughts on specific approaches within the theme of Triage Methods: prioritizing those at risk of crush syndrome, reaching the nearest person, using the START triage method, treating everyone equally, and giving priority to those with chronic diseases (Figure 2).

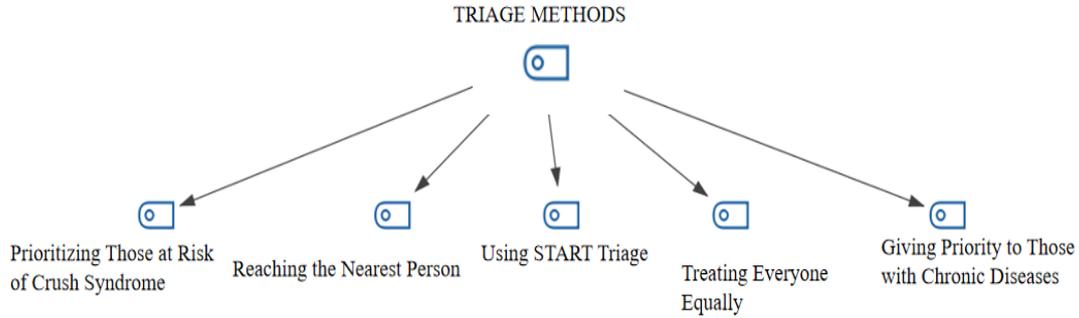


Figure 2. Main Theme of Triage Methods and Subthemes

Subtheme 1: Prioritizing Those at Risk of Crush Syndrome

The participants indicated that due to the high number of casualties, they were unsuccessful in applying triage methods effectively. Specifically, P2 mentioned, *"We particularly prioritized treatment for patients at risk of developing crush syndrome,"* and P5 added, *"We especially prioritized crush syndrome..."* while P6 expressed, *"The thing we feared most during the earthquake was crush syndrome."*

Subtheme 2: Reaching the Nearest Person

P2 remarked, *"Regardless of the medical triage color, if a disaster victim was in an accessible place, we immediately established an intravenous route and provided fluid support... the nearest person to you was your highest priority"* and P3 stated, *"We couldn't perform triage during the earthquake or in the debris. Everything developed spontaneously; we tried to manage the situation based on the circumstances."*

Subtheme 3: Using START Triage

Some participants tried to use the START triage method commonly employed in disaster triage, though they found it ineffective in such large-scale earthquakes. P5 stated, *"It wasn't really possible to apply this during the earthquake,"* while P6 noted, *"We use the START triage method... We followed our own experiences in the order of intervention."*

Subtheme 4: Treating Everyone Equally

P2 commented, *"There was no class distinction. For us, every human being, every person at that moment, was a priority and usually, multiple teams were involved in extractions, and no one was*

neglected," and P3 explained, "Interventions were performed on all extracted patients regardless of code... Wherever there was a sound, teams tried to reach every debris, every area to provide assistance."

Subtheme 5: Giving Priority to Those with Chronic Diseases

P1 stated, *"We gave priority to those with chronic diseases such as diabetes, asthma, hypertension,"* highlighting that particularly in field hospitals established after the earthquake, priority was given to patients with chronic diseases.

Main Theme 4: Reasons For Inability To Implement Triage

The participants noted that they were unable to effectively implement triage methods, a result stemming from the challenges encountered in applying the triage techniques discussed in the previous main theme. The reasons cited for the inability to implement triage included: the vast scope of the disaster area, insufficient personnel, lack of coordination, and the absence of living casualties, each of which is elaborated upon in subthemes (Figure 3).

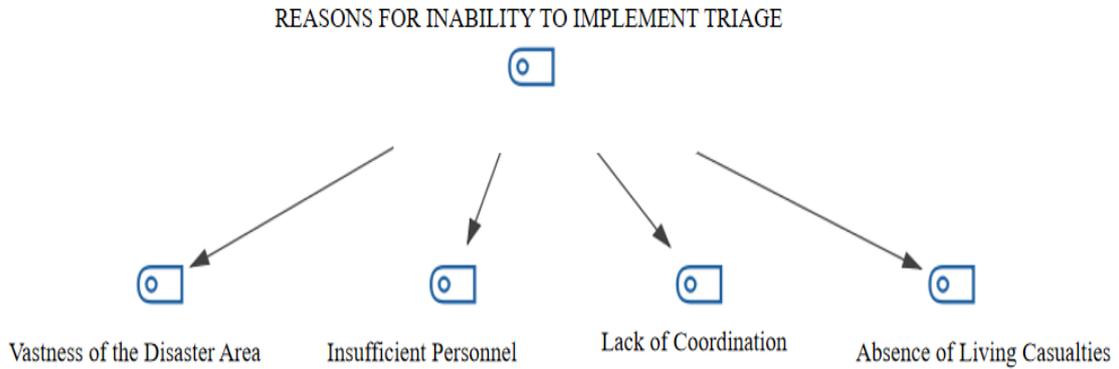


Figure 3. Main Theme of Reasons for Inability to Implement Triage and Subthemes

Subtheme 1: Vastness of the Disaster Area

The extent of the earthquake area was declared in a report by Disaster and Emergency Management Bureau of Türkiye (DEMB) as, "The earthquake affected an area of 108,812 km², encompassing 11 provinces in the Eastern and Southeastern Anatolia regions." (AFAD, 2023). The participants explained their inability to implement triage due to this vastness: P1 stated, *'...the*

area being so vast,' P3 mentioned, "...there was such great chaos that triage was very difficult in the initial days, and I realized that triage was not possible under these circumstances,' and P5 explained, '...the area was so vast that effective triage could not be implemented,' while P6 added, '...despite giving triage training myself, we could not reflect it in the field... Environmental conditions made it very unimplementable.'

Subtheme 2: Insufficient Personnel

Another subtheme explaining the main theme is the shortage of personnel, as stated by P3, '...for the first three days, our numbers were definitely insufficient,' and P5 said, 'The destruction was so extensive that unfortunately, the teams were incomplete. Help could not come from neighboring provinces because they unfortunately shared the same fate.'

Subtheme 3: Lack of Coordination

The participants explained the lack of coordination: P2 stated, '...lack of coordination hindered our work and, consequently, we could not manage triage effectively,' P3 mentioned, '...there was great chaos in the initial process,' and P6 expressed, '...I think there was a significant lack of coordination due to the magnitude of the disaster.'

Subtheme 4: Absence of Living Casualties

The participants noted that after the first few days, the majority of those extracted from the debris had lost their lives, thus reducing the need for triage: P1 remarked, '...there was no one left injured in the debris to necessitate triage,' and P5 observed, '...after 72 hours, there were very few survivors.'

Main Theme 5: Problems Encountered

The participants encountered various problems in the earthquake area, which led to the formation of subthemes under the theme of Problems Encountered, including health problems in communal living areas, inability to create safe zones, deficiencies in intervention organization, and lack of equipment (Figure 4).

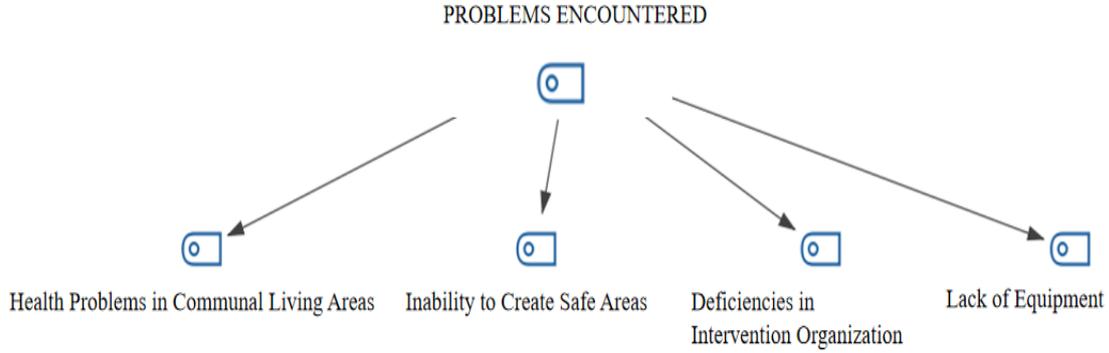


Figure 4. Main Theme of Problems Encountered and Subthemes

Subtheme 1: Health Problems in Communal Living Areas

P1 highlighted the challenges of managing health issues in communal living areas, stating, *"We were there to take precautions against health problems that emerged in communal living areas."*

Subtheme 2: Inability to Create Safe Areas

P1 pointed out the importance of safety in triage, mentioning, *"Creating a safe area is the first step in triage."*

Subtheme 3: Deficiencies in Intervention Organization

The participants discussed the difficulties in coordination due to the magnitude of the event, its widespread impact, and communication problems. P2 expressed, *"I cannot compare the Maraş earthquake with other disasters we have experienced. There was a very different kind of coordination deficiency."* P3 added, *"Because phones did not work in the area, we couldn't communicate at all, not even with our own colleagues in the first three days. After that, things slowly started to get organized, and we began to coordinate."*

Subtheme 4: Lack of Equipment

The participants described the subtheme related to equipment shortages. P1 said, *"There needs to be significant team and equipment support, and serious expertise needs to be employed, just like at DEMB."* Meanwhile, P6 noted, *"As medical rescue teams, we lack sufficient knowledge and equipment for search and rescue."*

Main Theme 6: Recommendations

The participants offered various solutions to the problems encountered in the earthquake area. These recommendations formed the subthemes of receiving disaster response training, better organization, equipment preparation, and increasing the number of NMRT volunteers (Figure 5).

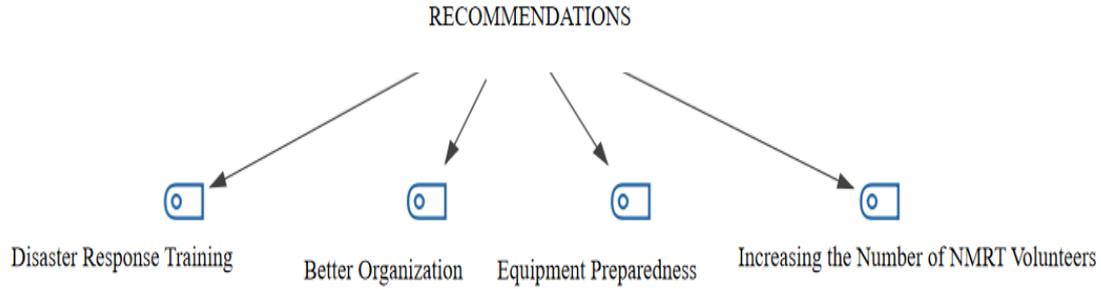


Figure 5: Main Theme of Recommendations

Subtheme 1: Disaster Response Training

P2 emphasized the importance of being prepared for any disaster, advocating for more informed and capable health workers: *"I am fully convinced that we must always be ready for such missions, and I believe everyone should be committed to this path because we live in a disaster-prone area. As Türkiye, we can be ready for anything at any moment. The more educated people are, the better coordinated they will work. It's very important for us all... Not only earthquakes, but also floods, fires, and other disasters happen, like the avalanche disaster in Van..."* P5 mentioned, *"All health personnel should definitely undergo NMRT training. Additionally, all health personnel should definitely receive training for search and rescue operations."* P6 added, *"As medical rescue teams, we lack sufficient knowledge and equipment for search and rescue. With the expansion of the Ministry of Health's NMRT ATTACK system to all provinces, we will reach a level where we can conduct both search and rescue and medical activities simultaneously. I believe this system will also lighten the burden on DEMB..."*

Subtheme 2: Better Organization

P1 discussed ongoing pilot projects by the Ministry of Health for NMRT ATTACK teams that can conduct both search and rescue and medical interventions under challenging conditions, including water, debris, and harsh winter conditions: *"I think this will significantly reflect well in the field. Normally, no entry is possible without DEMB's permission, which causes delays."*

Therefore, an independent NMRT team will solve this problem. For example, I believe it will significantly reduce the death rates or the chances of sequelae in cases under debris, such as crush syndrome, which particularly require a health professional's intervention."

Subtheme 3: Equipment Preparedness

P4 stressed the importance of preemptive measures and the necessity of having all the required equipment and supplies ready before a disaster: *"After such a large-scale event occurs, nothing much can be done; the important thing is to take measures beforehand. All necessary equipment and gear must be available for earthquakes."*

Subtheme 4: Increasing the Number of NMRT Volunteers

P5 pointed out the need for more volunteers: *"The number of volunteers affiliated with NMRT is very low; this number must be increased in order for us to overcome such incidents."*

3. DISCUSSION

The findings from this study, which aimed to examine the disaster triage management experiences of health professionals who served under NMRT during the earthquakes centered in Kahramanmaraş, were discussed in the light of the literature. The study resulted in six (6) main themes and a total of twenty-three (23) subthemes.

This study found that triage could not be effectively applied due to the large area affected by the earthquakes in Kahramanmaraş. Health workers were divided into small groups in order to reach more injured people. According to the literature, in large disasters, the size of the affected area and the large population may lead to inadequate health services and delays in first intervention and evacuation (Avcıl & Aydın, 2023). Kalantar Motamedi (2012) highlights that limited medical resources in large disaster areas make effective triage practices difficult.

The spread of disasters over large areas makes it difficult to organise health services. Eyler et al (2022) highlighted the importance of preparation to ensure the effectiveness of health services in the Izmir earthquake. However, providing similar organisation in large disaster areas such as Kahramanmaraş is more challenging. Although the role of field hospitals and mobile health teams is important, shortages of medical equipment and personnel hamper organisation (Akarca, 2023; Bıçakçı & Nevruz, 2021).

When examining the theme of Emotions Experienced, health professionals experienced feelings of helplessness, sadness, composure, altruism, inability to overcome the shock of the event, and

trying to be patient. One participant expressed, "*They think they will stay here, die here under the rubble, they don't consider it.*" In literature, a study on the experiences of nurses who served during the Pazarcık earthquake found that similar feelings were expressed by a nurse describing the disaster: "*There was fear of another earthquake, but you don't think about that when you are working; you focus on the patients.*" (Korkmaz et al., 2023)

While participants generally stated that triage methods were ineffective, the formation of different subthemes under the main theme of Triage Methods, as mentioned in the introduction, indicates that an effective triage method was not implemented. The literature suggests that similar results are obtained in disaster areas that are vast and have a high number of casualties, leading to a disparity between the number of victims and the available medical resources (Kalantar Motamedi, 2012). Another study in the literature reported that in the 2010 earthquake in Haiti, the destruction of health infrastructure and the limitation of mobile health teams caused difficulties in triage and initial interventions (Arnaouti, et al., 2022). However, Eyler et al. (2022) reported no problems with triage and initial interventions in their study on the İzmir earthquake, as the earthquake occurred during the day, hospitals continued to operate actively, and the incident did not exceed the existing medical and human resources.

The participants also reported various problems encountered in the earthquake area, such as health problems in communal living areas, inability to create safe zones, deficiencies in intervention organization, and lack of equipment. Literature indicates that most hospitals in the affected area could not provide health services due to destruction and damage and attempts to compensate this deficiency with field hospitals were unsuccessful (Akarca, 2023; Korkmaz et al., 2023). Both literature and the findings of this study commonly suggest that in situations where disasters spread over a wide area and the number of casualties is high, existing triage systems can be ineffective, especially when they are not adapted to the demographic structure of the countries.

CONCLUSION AND RECOMMENDATIONS

Turkey is frequently exposed to disasters due to its diverse geographical conditions. One of these disasters that frequently causes loss of life is earthquakes, a natural phenomenon. Situated on an active seismic belt, the country experiences intermittent seismic events, as evidenced by the Kahramanmaraş-centered earthquakes discussed in this study, which resulted in numerous fatalities. In Turkey, the initial medical response during earthquakes is conducted by NMRT

teams. The efficiency and effectiveness of triage during these initial interventions are directly correlated with the number of lives that can be saved. Participants who were involved in field interventions during the Kahramanmaraş earthquakes reported that triage could not be performed effectively due to the lack of qualified personnel, insufficient equipment, and inadequate coordination in disaster situations, particularly considering the extensive affected area. In light of these findings, it is recommended to develop a triage system that takes into account the geographical and demographic structure of the countries to ensure effective triage in large-scale events, and to provide comprehensive training for healthcare workers involved in disaster response to maximize the life-saving potential of both medical and search and rescue activities within a limited timeframe.

Limitations

The small sample size and the study being single-centered could limit generalizability, but the inclusion of health professionals who served in different earthquake areas allowed for a broader scope of data.

Ethical Approval

The study received ethical approval from the Non-Interventional Ethics Committee of Van Yüzüncü Yıl University, under the decision number 2023/08-03 dated 11.08.2023, and institutional approval was obtained from the Van Provincial Health Directorate before the commencement of the study.

Contributions of Researchers

All authors have contributed to the article.

Conflict of Interest

There are no conflicts of interest.

Financial Support

The budget for the research will be covered by the researchers.

Participant Consent

The participants were sent a voluntary informed consent form, and upon obtaining their permissions, the study commenced. Participant information was kept confidential, and the participants were assigned code names P1, P2, P3, P4, P5, and P6.

Acknowledgments

We would like to thank all participants who worked in challenging conditions to save lives.

**This study was presented as an abstract at the “5th International 13th National Turkish Surgical and Operating Room Nurses Congress” held on November 16 - 19, 2023.*

REFERENCES

- Akarca, F. K. (2023). Earthquake experiences of emergency medicine specialists. *Community & Physician*, 38(5). <https://doi.org/10.1017/S1049023X23000523>.
- Arnaouti, M. K. C., Cahill, G., Baird, M. D., Mangurat, L., Harris, R., Edme, L. P. P., Joseph, M. N., Worlton, T., Augustin, S., Jr, & Haiti Disaster Response – Junior Research Collaborative (HDR-JRC). (2022). Medical disaster response: A critical analysis of the 2010 Haiti earthquake. *Frontiers in Public Health*, 10, 995595. <https://doi.org/10.3389/fpubh.2022.995595>.
- Avcıl, S., & Aydın, K. (2023). Presentation and organization of health services in Kahramanmaraş earthquakes. *International Congress on Eurasian Economies 2023* (pp. 18-27). İzmir, Turkey. (Original work published in Turkish).
- Bazyar, J., Farrokhi, M., & Khankeh, H. (2019). Triage systems in mass casualty incidents and disasters: A review study with a worldwide approach. *Open Access Macedonian Journal of Medical Sciences*, 7(3), 482-494. <https://doi.org/10.3889/oamjms.2019.120>.

Bıçakçı, N., & Nevruz, M. (2021). Field hospitals in disasters. *Emergency Aid Disaster Science*, 1(1), 17-21.

Canatan, H. (2020). An investigation on the concept of triage in the event of disasters and emergencies: Definition, ethical decision-making. *Journal of International Health Sciences and Management*, 6(12) (Special Issue), 74-82.

Çelebi, İ., & Uçku, Ş. R. (2015). Earthquake knowledge level of staff in Kayseri 112, earthquake preparedness and affecting factors. *Extraordinary Situations and Public Health*, 18th National Public Health Congress, 05-09 October 2015, Konya. (Original work published in Turkish).

Demirci, M. (2022). Prehospital emergency health services in disasters. In E. Atasoy & F. Özpulat (Eds.), *Disaster Nursing* (pp. 111-136). Ankara: Nobel.

EM-DAT | The International Disasters Database. <https://public.emdat.be/>, 20.05.2023.

EM-DAT | The International Disasters Database. (2023). Retrieved from <https://www.emdat.be/classification>, 20.05.2023.

Erdogan, S. (2018). Qualitative research. In S. Erdoğan & N. Esin (Eds.), *Research in Nursing* (pp. 133-164). Istanbul: Nobel Medical Bookstores. (Original work published in Turkish).

Eyler, Y., Kılıç, T. Y., Atilla, Ö. D., & Berksoy, E. (2022). Analysis of patients applying to Health Sciences University Tepecik Training and Research Hospital emergency medicine clinics after the 30 October 2020 Izmir earthquake. *Journal of Tepecik Education & Research Hospital*, 32(3). <https://doi.org/10.4274/terh.galenos.2021.62347>.

Farokhzadian, J., Shahrabaki, P. M., Farahmandnia, H., Eskici, G. T., & Goki, F. S. (2024). Exploring the consequences of nurses' involvement in disaster response: Findings from a qualitative content analysis study. *BMC Emergency Medicine*, 24(1), 74. <https://doi.org/10.1186/s12873-024-00506-7>.

Holla, K., Ristvej, J., & Titko, M. (2018). *Crisis management: Theory and practice*. London: BoD – Books on Demand.

Kalantar Motamedi, M. H., Sagafinia, M., Ebrahimi, A., Shams, E., & Kalantar Motamedi, M. (2012). Major earthquakes of the past decade (2000-2010): A comparative review of various aspects of management. *Trauma Monthly*, 17(1), 219–229. <https://doi.org/10.5812/traumamon.4519>.

Korkmaz, E., Hacıdursunoğlu Erbaş, D., Azizoğlu, H., İlbey Koç, B., & Eti Aslan, F. (2023). Can a nurse in an earthquake help in a disaster? Experiences on the 2023 Pazarcık earthquake. *Kocaeli Medical Journal*, 12(3), 395-401. <https://doi.org/10.5505/ktd.2023.04207>.

Official Gazette of the Republic of Turkey. <https://www.resmigazete.gov.tr/eskiler/2021/05/20210525-3.html>, 25.05.2021.

Ozkan, S., & İkizceli, İ. (2023). Triage in disaster management. *Cerrahpaşa Medical Journal*, 47(S1), 9-16.

Peng, Y., & Hu, H. (2021). Assessment of earthquake casualties and comparison of accuracy of five injury triage methods: Evidence from a retrospective study. *BMJ Open*, 11(10), e051802. <https://doi.org/10.1136/bmjopen-2021-051802>.

Perry, R. W. (2018). Defining disaster: An evolving concept. In H. Rodríguez, W. Donner, & J. E. Trainor (Eds.), *Handbook of disaster research* (pp. 3-22). New York, NY: Springer.

Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349–357. <https://doi.org/10.1093/intqhc/mzm042>.

TR Ministry of Internal Affairs, Disaster and Emergency Management Presidency. <https://www.afad.gov.tr/>, 25.05.2023.

Turkish Ministry of Health. (2021). Health services management in disasters and emergencies regulation. Retrieved from <https://acilafet.saglik.gov.tr/TR-85509/afetlerde-ve-acil-durumlarda-saglik-hizmetleri-yonetmeligi.html>, 23.05.2023.

Usta, G. (2023). Statistical analysis of disasters occurring in the world (1900-2022). *Gümüşhane University Journal of Social Sciences*, 14(1), 172-186. <https://doi.org/10.36362/gumus.1138791>