

Original Research

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Medical Response to the February 6, 2023, Earthquakes in Hatay: Challenges Faced in the Deadliest Disaster in the History of Türkiye

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Abstract

Objective: The Kahramanmaraş earthquakes struck the north-eastern part of Türkiye and Syria on February 6, 2023. It is well known that timely coordination and provision of emergency medical care in the field is particularly important to save lives after earthquakes. This study aimed to identify the challenges faced by medical responders on the ground.

Methods: This exploratory-descriptive qualitative study was conducted in Hatay, the province most affected by the earthquakes. Data were collected through in-depth semi-structured interviews and field observations, and then analyzed using thematic analysis approach.

Results: The study was carried out with 15 first responders from the medical profession. The study revealed 9 themes of challenges faced by medical responders: providing safety and security, human resources management, meeting personal needs, recording data, communication, patient transport, burial procedures, psychological acumen, and logistical problems. Some problems were resolved after 72 h and some continued until day 7.

Conclusions: Inadequate organization of volunteer health workers, communication breakdowns, and logistical problems are some of the main challenges. To address these issues, satellite phones and radio systems can be promoted, as well as disaster-resilient logistical planning and better coordination of volunteers.

Earthquakes, one of the world's most frequent natural events, can cause devastating disasters. According to the United Nations Office for Disaster Risk Reduction, earthquakes affected 118 million people between 2000 and 2019, causing 721,318 deaths and \$636 billion in economic losses.¹ Located in the active Mediterranean-Alpine seismic zone, Türkiye is one of the countries most prone to earthquakes.²

One of the biggest disasters of all time recently occurred in Türkiye. It was the deadliest disaster in the country's history.³ On February 6, 2023, two catastrophic earthquakes hit Türkiye's southern area, with the epicenters of Pazarcık and Elbistan in Kahramanmaraş registering

7.7 and 7.6 on the Richter scale, respectively. The overall surface rupture length caused by the earthquakes was 571 km, severely damaging the 11 provinces.⁴ As of February 24, there have been 44,218 deaths and tens of thousands of injuries in Türkiye.⁵ A fourth-level disaster was declared, and international assistance requested by the Turkish authorities in the first hours after the earthquakes.⁶

The first 72 h after an earthquake are considered the “golden hours” for medical response, search, and rescue. After the first 72 h, survivors pulled from the rubble have a 5–10% chance of survival, and each passing hour increases the risk of injury and death.⁷ However, due to the chaotic conditions and crisis, medical response and rescue attempts encounter managerial, logistical, technical, and medical problems during this very acute stage.⁸ In fact, there can be unusual resource shortages and information/communication network disruptions. Furthermore, response teams often include personnel from a variety of disciplines, which might cause coordination issues in this chaotic situation.^{9,10} There are also several environmental elements that can pose a risk to the safety of response teams.¹¹

A “field,” in disaster terminology, is a disaster-affected area where normal living activities are disrupted. Field health services begin with an emergency response at the site of the collapse, and these services are particularly important when hospitals are destroyed in large-scale disasters.¹⁰ On-site medical interventions focus on prioritizing casualties and providing immediate emergency care to survivable victims, pain relief and subsequent intervention as needed, and ensuring stabilization and patient transportation.¹²

The meticulous identification of medical response teams' challenges in disaster areas, as well as the development of solutions to these problems, are expected to make a substantial impact. However, it appears that there is a significant gap in the literature on this subject. The goal of this study was to identify and offer solutions to the challenges encountered by medical response teams following the Kahramanmaraş earthquakes. Furthermore, rather than taking a broad view of the post-earthquake response process, looking at different time periods could provide valuable data for identifying problems and generating solutions. Following this approach, the challenges were further evaluated according to three time periods: the first 24 h, 25 to 72 h, and 72 h after the quake.

Methods

Research Setting

The study was conducted in Hatay, a port city in the southernmost part of Türkiye, which was the hardest hit of the 11 provinces affected by the devastating earthquakes. It is strategically located on the Syrian border.^{13,14} Before the earthquakes, Hatay had a population of 1,686,043 and was home to 350,000 immigrants.¹⁵ In Hatay, there were 23,000 deaths, 30,762 injuries, 215,255 buildings demolished, and 270,000 seriously damaged. The destruction and inoperability of hospitals in the city center severely hampered emergency medical response efforts.^{14,16}

Design

The study used an exploratory-descriptive qualitative design to explore and gain insight into the experiences of medical responders regarding the challenges of providing on-site medical care in the aftermath of the earthquakes. This research approach has been shown to help understand descriptions of perceptions and lived experiences.¹⁷

Study Participants

Participants recruited for the study using snowball sampling technique. The data collection process was initiated with the participation of the first medical responder who was a volunteer and met the study eligibility criteria. This participant was then asked to recommend other medical responders. This method was followed until data saturation was reached.¹⁸ To ensure data richness and a perspective diversity, there was a desire to include participants from a range of disciplines, and the following sampling criteria were used: (1) being a health professional (doctor, nurse, paramedic, emergency medical technician [EMT], etc.), (2) participation in medical response in Hatay within the first 7 d, and (3) voluntary participation in research.

Data Collection

Data were gathered through semi-structured interviews with 15 on-site medical responders. The interviews were conducted by three researchers (I.T., P.Ş., B.B.). The first author (I.T.) actively involved in the medical response in the disaster area between the 2nd and 10th day of the earthquake. During this time, he collected data by recording his observations in the field. These observations were used to understand and elaborate the statements and opinions of the respondents who participated in the study. This research perspective allows for an exchange of experiences between the interviewee and the researcher, which can lead to answers that provide a better understanding of the issues.¹⁹ The interviews were

conducted using the Zoom platform, which is recognized as an innovative and easy-to-use interviewing platform,²⁰ and took place from February 18 to March 15, 2023.

Based on the existing literature and the field observations made by the first author (I.T.), a semi-structured interview guide was developed by the researchers.^{21–24} The guide was evaluated by 3 emergency physicians with experience of the Kahramanmaraş earthquake medical response. As a result of the evaluation, the comprehensibility, suitability, and relevance of the questions were considered adequate.

At the beginning of the interviews, each participant was invited to speak freely through general questions such as: "How did you arrive at the disaster area and what did you encounter first", and "Could you share your experiences regarding the challenges you faced during medical response efforts?" To conduct the research in a process-oriented manner, more specific questions were gradually asked according to the interview guide.²⁵ The duration of the interviews was between 45 and 60 min. The interviews were audio-recorded and transcribed verbatim. The audio recordings were listened to several times to meticulously check the transcription correctness. Then, all transcriptions were assigned a distinct identity number and transferred to MAXQDA (2020).

Data Analysis

Data were analyzed using the thematic analysis strategy.²⁶ First, two of the authors (I.T., P.Ş.) reviewed the data and open coded the three transcripts to identify underlying concepts and ideas. Next, a codebook was created and 3 authors (I.T., P.Ş., B.B.) independently applied the codes to the transcripts. Then, coding decisions were compared and necessary adjustments to the codebook were made. Finally, the codes were compared for differences and similarities, and categories and themes were identified.

Data Integrity

To ensure the rigor of the study, data were collected and analyzed simultaneously, and data were collected until saturation was reached.²⁷ Furthermore, three member-checking interviews were conducted (2 doctors and 1 nurse) to confirm that the results reflected the participants' experiences. Credibility was achieved through data and investigator triangulation strategies. Also, to ensure the research credibility, the team conducted an expert review of the findings and interpretations. In addition, the confirmability and transferability of the data were ensured by explaining the research method, data collection instrument, data collection, analysis, and interpretation process, and by specifying the characteristics and selection method of the study group.^{28,29}

Results

Sample Description

Semi-structured interviews were conducted with 15 medical first responders. Their mean age was 36.0 ± 7.31 y (min = 25; max = 50) and 86.7% were male. The majority of the participants (80.0%) reached the area on the day of the earthquake, and their working time in the earthquake area was at least 4 d (Table 1).

Key Themes

Medical responders reported on several major challenges, as well as solutions to these challenges. The themes representing the most frequently discussed challenges were as follows: (1) providing

Table 1. Demographic characteristics of participants involved in medical response efforts

Participant	Age	Gender	Occupation	Marital status	Residence	Response period
P1	35	Female	Nurse	Single	Istanbul	2nd - 8th day
P2	38	Male	Doctor	Single	Hatay	1st - 14th day
P3	32	Female	Doctor	Married	Istanbul	1st - 5th day
P4	38	Male	EMT	Married	Antakya	1st - 8th day
P5	43	Male	Anaesthetic Technician	Married	Istanbul	1st - 12th day
P6	49	Male	NMRT ^a member	Married	Istanbul	1st - 14th day
P7	42	Male	Doctor	Married	Istanbul	1st - 14th day
P8	50	Male	Doctor	Married	Trabzon	1st - 10th day
P9	32	Male	EMT	Single	Antalya	1st - 14th day
P10	28	Male	Paramedic	Married	Kastamonu	2nd - 8th day
P11	32	Male	Doctor	Single	Kastamonu	3rd - 7th day
P12	30	Male	EMT	Married	Hatay	1st day - continue
P13	34	Male	Paramedic	Single	Hatay	1st day - continue
P14	32	Male	EMT	Married	Hatay	1st day - continue
P15	25	Male	Paramedic	Single	Hatay	1st day - continue

^aNational Medical Rescue Team.

safety and security, (2) human resources and management, (3) meeting personal needs, (4) recording patient data, (5) communication and information exchange, (6) patient transport, (7) funeral and burial procedures, (8) psychological acumen, and (9) logistics.

Providing Safety and Security

Almost all participants reported experiencing life safety concerns due to aftershocks and occupational safety problems such as fire hazards. Property security issues involving theft and looting were also reported by most participants. The main reason for theft and looting, according to participants, was people's efforts to protect themselves and meet their needs. However, ambulances and emergency stations were also looted. This led to disruptions in health services. One participant explained:

"We experienced an incident of theft. Later, the police were sent for. It was rather difficult, but as a result, this problem was fixed. It must have been (resolved) on day three or four" (P10, Paramedic).

Some participants pointed to the fire risk and said that electric stoves could be used in tents through a generator system to keep field staff warm. However, electric stoves posed a fire hazard due to burning cables, resulting in power cuts and health services disruption. As one participant stated:

"From time to time cables of heaters burned, and we very nearly had problems with fire in the tents. This resulted power outages and disruption in the interventions in all tents" (P7, Doctor).

Human Resources and Management

Approximately 4 or 5 h after the earthquake, medical rescue teams and ambulances from neighboring provinces quickly arrived in Hatay. However, participants agreed that chaotic field conditions made team coordination difficult, and they stated that coordination was achieved toward the end of the first 72 h. There was also general agreement that the influx of volunteer health workers into the region made coordination more complex. One participant said:

"...Imagine, there are 600 people in such an area, you can't give them all a job, they can't find anything to do..." (P5, Anesthetic Technician).

Concerning the volunteer workforce, some participants shared their observations that, while well-intentioned, volunteers may perform incorrect practices due to a lack of understanding. Participants emphasized the need for disaster response training in this context:

"We do not question our people's good intentions in any way, but there are groups and individuals who try to do things in good faith, but who we believe are doing more harm than good because they have not received training." (P6, National Medical Rescue Team member).

Almost all participants stressed the importance of having technical staff in the field to carry out tasks such as operating the generator and setting up tents and electrical installations. Furthermore, they reported encountering a tremendous influx of patients on the first day, and that health-care workers were insufficient in terms of quality and number. The field hospitals' creation and the arrival of reinforcement teams handled the manpower shortage on the second and subsequent days. One participant said:

"I don't know, it was indescribable, it was really unheard of. A lot of people came. They died there in our hands. We took them off the stretcher and put them on the ground in the rain. To receive other arrivals. It was such a day" (P4, EMT).

Meeting Personal Needs

Participants noted that they did not have adequate conditions to meet their personal needs while working in the field. In terms of personal needs, they described difficulties in keeping warm, finding a place to stay, lack of food, no opportunity to rest and hygiene problems. Most of them explained that they considered this situation to be completely normal under disaster conditions, that they worked with great dedication and self-sacrifice. One participant remarked:

"We couldn't even drink water until the evening on the first day. That is, there wasn't even any water. As far as we can understand, Hatay was not evaluated as very bad, and so the assistance did not come. As I said, on the first day, we couldn't obtain anything for 24 hours. On the second day, yes,

the needs began to be met. After 72 hours, yes, I can say that it was in place by then. Our needs were being met” (P4, EMT).

Recording Patient Data

The consensus among health-care professionals was that there were problems with recording patient data. Participants explained that they were unable to access any digital health systems for approximately three d. This access problem was related to the systems not working and the lack of Internet connection. Also, participants explained that they kept manual records and emphasized that a major challenge in this process was the lack of staff available to keep manual records. One participant put it:

“With analogue systems, that is, paper and pencil, and then later, by setting up the electrical infrastructure, I mean the generator systems, and later, by setting up computers and so on, both patient records and personnel records began to be transferred to digital system, but at the first stage, this happened after about 3 days” (P5, Anesthetic Technician).

Communication and Information Exchange

Participants indicated that communication problems seriously hampered service delivery. Almost all participants identified the lack of signal and the inability to provide mobile communications, the lack of radio communications, as a major challenge. Damage to base stations in the region was defined as a main cause of communication disruption. It was noted that this problem persisted even after 72 h. One participant said:

“... We had serious problems with our radio communication. We could not contact the teams. Their telephones were already completely dead and we could not communicate with anyone” (P2, Doctor).

Patient Transport

In the aftermath of the massive earthquakes, participants reported serious challenges in transporting victims to hospitals. There were 2 main reasons for this challenge, the first being road closures caused by huge amounts of debris. The second was citizens’s request from ambulance staff to carry out search and rescue operations due to the chaotic and crisis conditions. The participants explained that citizens in the disaster area had stopped ambulances and called for help to pull their relatives out from under the collapsed buildings. It was reported that this situation made it difficult for ambulance teams to reach and transport patients rescued from under the rubble. According to one participant:

“There have been cases where ambulances have been stopped on the road and people said we are getting sound from under the rubble here, get our patient out or get our wounded out, then you can go to your destination. So it is a serious crowding...” (P9, EMT).

The chaotic conditions in the disaster area also caused significant organizational problems for ambulance services. Because the health-care facilities in the province were destroyed, they could only provide transport to distant provinces, which took a long time and made it difficult to organize transport. It was reported that the problems related to patient transport organization began to improve after the second day, when the helicopters were put into service. As one participant explained:

“The transfer coordination, which should have been the continuation of the intervention, was also in a bad way. ... In other words, the ambulance we sent to a place like Adana was off for at least 7 hours. When we sent patients in this way, this time the ambulance shortages began to appear. On the second day, the helicopters of the Turkish Armed Forces began to support us. After the second day, we felt relief...” (P2, Doctor).

Funeral and Burial Procedures

Most interviewees emphasized that the earthquake killed a huge number of people in the region. As the number of bodies exceeded the capacity of the identification procedures, identification problems arose and burials were delayed. As a result, the area designated for bodies was full and bodies were kept near the medical tents. In the words of 1 participant:

“... a cemetery complex was established and the temporary morgue here was completely closed on the 2nd or 3rd day; not only was the appearance unpleasant, but also, it was not right in terms of hygiene; the complex was moved there and the forensic process was directed there” (P15, Paramedic).

Psychological Acumen

All of the participants stated that they spared no sacrifice to provide health-care services. However, they mentioned that having to struggle with the negative conditions and heavy working conditions strained them and brought them to the point of exhaustion. One participant said:

“I remember that I really reached the point of exhaustion twice...but we are men of duty. Our state sent us there, my state sent me there and sent me for a reason. There was no giving up when we saw such a little difficulty. We went to all lengths” (P8, Doctor).

The presence of bodies around the medical treatment area was deemed by most of participants as “unbearable” and a psychologically painful experience. One participant stated:

“It was a distressing process, because even beside our rest tent, it was full of bodies... it was a very different feeling to put it [bodies] in the area shown to me. But we did that too” (P1, Nurse).

Logistics

Considering the severity of the disaster, logistical facilities in the area were insufficient. Most participants reported a lack of goods and equipment because of the collapse of logistical warehouses, the devastation of hospitals, and the turmoil experienced, particularly during the first 24 h. Furthermore, individuals reported difficulties in getting cold-weather clothing. One participant explained:

“There was a shortage of tents and also a great shortage of medical supplies, you know, there was no medicine or equipment... After the first day, when the volunteers started to arrive on the second day, we as staff relaxed a bit and started to find equipment.” (P3, Doctor).

The study found that logistical problems were severe in the first 24 h, later began to be resolved between 24 and 72 h, then were mostly resolved by the 72nd hour and some continued until day 7. **Table 2** summarizes the participants’ perspectives on the evolution of the challenges they encountered throughout time.

In the study, health-care practitioners were asked to suggest solutions to challenges they encountered. Participants proposed changes to the formal volunteer system, maintaining communication and information exchange in the case of a disaster, developing the structure of National Medical Rescue Team (NMRT), which is the most important medical rescue team in Türkiye, and strengthening funeral management services (**Table 3**).

Discussion

The study, which aimed to identify the problems faced by medical teams in the field and solutions to these problems, found that there were very serious difficulties in transporting patients. In fact, the

Table 2. Distribution over time of severity of problems related to medical response efforts

Problem areas	24 h	25-72 h	72 h – 7 days
Providing security	Severe	Partially improved	Significantly improved
Human resources and management	Severe	Shortage of staff was overcome, but organization problem persisted.	Organisation problem decreased but persisted
Meeting personal needs	Severe	Partially improved	Decreased but persisted
Recording patient data	Severe	Severe	Decreased but persisted/partially improved
Communication and information exchange	Severe	Severe	Decreased but persisted/partially improved
Patient transport	Severe	Helicopter transport was provided and problem decreased	Land transport problems decreased significantly but persisted
Funeral and burial procedures	Severe	Severe	Resolved
Logistics	Severe	Partially improved	Resolved

Table 3. Solution suggestions

• Preparation and development of digital platforms for data sharing by medical response teams
• Defining separate responsibilities for areas such as training, coordination, medical care, and transportation in the organizational/administrative structure of the NMRT ^a
• Backing up the systems used in healthcare to make them accessible in case of disaster
• Strengthening the academic aspect of the NMRT structure
• Improving the transfer to the area and coordination of funeral transport vehicles in the disaster area
• Developing the registration and organisation system for volunteers who are to serve in disaster areas
• Including technical staff in NMRT ^a teams to serve in the disaster area
• Preparing a chart showing the medical response units and headquarters in the field and reporting it to the teams so that staff can easily find the place of communication or destination

^aNational Medical Rescue Team.

Kahramanmaraş earthquakes destroyed over 215,000 buildings in Hatay.¹⁶ This created a huge debris field, and the rubble blocked transport routes. In addition, and more importantly, a huge workforce was needed to rescue citizens from the rubble. The study showed that, in this environment of chaos and confusion, citizens blocked ambulance teams to demand help to rescue their relatives under the collapsed buildings. Ambulance teams were asked to enter the rubble and remove casualties. This situation made it very challenging to provide emergency care and transport people pulled out of the rubble. To the best of our knowledge and research, this situation has not been reported in the literature before.

The study also found that health workers in the field were victims of theft, emergency centers and ambulances were looted, and that these security issues hampered the medical response. Theft and looting are among the problems commonly encountered in disaster-affected areas.³⁰ In the context of postdisaster security issues, security personnel play an important role in various types of law enforcement, such as locating missing persons, providing forensic and identification services, and conducting various traffic controls.³¹ All these findings provide evidence that, especially in a disaster of this magnitude, security forces urgently need to be deployed to the disaster site as medical rescue teams. This is essential to ensure that the first medical responders can carry out their own responsibilities, to protect them from the demands of citizens, and to address other security concerns, including theft and looting.

In this study, lack of communication was identified as a major source of challenges for the medical response efforts. Similarly, in the great Sichuan earthquake that struck China in 2008, communication could not be established until 42-150 h after the

earthquake, which added to the chaos.³² In fact, the first link in the disaster management chain is communication and information exchange. The first link's weakness is recognized as a risk for the entire management process.³³ To avoid such difficulties in the future, it is important to establish radio relay stations and mobile phone base stations on platforms that are not affected by disasters, such as hills at a reasonable distance from the city center.

Due to the lack of Internet access, teams were unable to enter data into digital systems or share data among themselves. The study's findings highlight the necessity for Internet-independent systems for both preserving and sharing patients' medical information. Recently, it has become increasingly important to establish effective communication networks at all levels of disaster response, including health information infrastructure and geographic surveillance systems, while prioritizing systematic community involvement and facilitating the transfer of available medical data from experts. Collecting information in a database across the affected area can aid decision-making and serve as a tool to evaluate activities during the disaster after the crisis.¹²

Literature reveals that, even if disaster response activities are launched rapidly, the date and location of the earthquake, as well as the destruction of essential infrastructure, might result in insufficient reaction time and inefficiencies in resource mobilization.³⁴ The Kahramanmaraş earthquakes caused widespread devastation and severely destroyed infrastructure in 11 provinces. The study indicated a fluctuating amount of staff shortages for medical response operations in the first days in the face of the disaster's severe destruction. On the 2nd and 3rd days, once official teams and informal volunteers arrived on the scene, a considerable human resource and workforce was gathered in the region.

However, it was asserted that, while official teams were coordinated from a single location, there were issues with informal volunteer coordination, and the workforce could not be managed effectively and efficiently enough. Similarly, Ramos-Zúñiga et al. noted that during the 2017 Mexico earthquake, an increase in the number of informal volunteers who arrived with a strong sense of solidarity in the face of the disaster could occasionally prevent qualified personnel from working.¹² Disasters where there is a significant imbalance between demand and capacity, such as the Kahramanmaraş earthquake, highlight the importance of both the volunteer system and the coordination of the community “response” in disaster response.

Participants reported having difficulty satisfying their personal needs such as lodging, hygiene, heating, and resting while working in the field. The participants stated that they would “spare no sacrifice” in the field and that they were prepared for challenging conditions, but that their job was severely impacted and their productivity reduced owing to their inability to meet their personal requirements. To address personal needs in disaster areas, it is critical to arrange supplies and logistics for cleaning, hygiene, and housing, and for local governments to take the lead.

Türkiye Disaster Response Plan (TAMP) was established in 2013 to effectively respond to disasters and emergencies of all types and sizes. This plan aimed to rescue as many victims as possible in a short period of time, to use resources effectively, to minimize the loss of human lives, to reduce economic and social losses, and to return the disrupted life activities to normal as soon as possible. In this plan, the public institutions, private sector, and nongovernmental organizations that will participate in the response to disasters, what they will do, and the response organization are described in detail. Based on the TAMP, a Provincial Disaster Response Plan has been prepared for each province.³⁵

After the earthquakes, the TAMP was implemented. However, due to the large scale of the disaster, the number of medical staff needed in the disaster area far exceeded the plans and preparations. Although the necessary medical personnel were gradually deployed, this overwhelming demand for the medical services in the disaster area made the response plans inadequate. In addition, according to these plans, when a disaster occurs in one province, response teams from neighboring provinces are quickly activated. But the Kahramanmaraş earthquakes affected 11 provinces. The neighboring provinces that were supposed to respond became victims of the earthquake. This severely hampered the implementation of the current plans. Furthermore, the loss of communications, the destruction of almost all buildings in the city, and the near impossibility of transportation also challenged the implementation of the plans.

In the medical literature, temporary heart muscle malfunction caused by acute ischemia is referred to as “myocardial stunning.” In this case, the problem is insufficient blood supply to the heart muscle, which normally returns to normal after a “stun” period of hours or days.³⁶ The crisis conditions that occurred following the earthquake were shown to cause “dysfunction” in disaster management processes, similar to cardiac stunning. Looking at these disruptions over time, we found that all of the problems observed were significant in the first 24 h, and that, after hour 48, there is a movement from chaos to coordination. Because of its similarity to myocardial stunning, the concept of “disaster stunning” can be proposed as a new term to define this period.

A disaster medical response cycle includes the hyper-acute stage within 24 h, the acute stage between 24 and 72 h, and the sub-acute stage between 72 and 216 h.⁹ More than 95% of people who are

rescued from the rubble and given emergency treatment survive in the cycle’s first 2 stages, but beyond 72 h, the survival rate drops dramatically.³⁷ Therefore, the first 72 h are regarded as the “golden hours” in contemporary procedures.³⁸ The challenges faced by medical responders were generally perceived to be serious in the first 24 h. There was then some improvement over the 24- to 72-h period, with some problems being resolved after 72 h and others persisting, albeit to a lesser extent, until day 7. In fact, the volunteers who arrived in the region provided great support and helped to solve many problems, but there were organizational problems in deploying these people. Furthermore, the humanitarian goods delivered to the region were critical in resolving logistical issues. The limited traffic flow, on the other side, made it impossible for aid vehicles to access the impacted areas. The inability to access existing digital systems and efficiently use communication and information exchange channels facilitated the persistence of organizational challenges after the 72nd hour.

Limitations

This study provides a detailed analysis of the challenges faced by medical responders after the Kahramanmaraş earthquakes. However, there are several limitations to this study. The first limitation relates to the sampling methodology. Indeed, snowball sampling is based on the individual networks and preferences of initial contacts, which can limit the range of themes that emerge. The second limitation is the qualitative nature of this study. Although we used standard methods to ensure the accuracy of the data, the results may be subjective. Different researchers reading our interviews may come to different conclusions.

Conclusions

The Kahramanmaraş earthquakes destroyed a huge number of buildings, including health facilities, making it almost impossible to provide health services and transport patients. This highlighted that the first and most important step in disaster resilience is to have strong infrastructure and resilient buildings. The study also showed that reliable communications, training and organizing volunteer teams, coordinating disaster management teams, providing adequate logistical services, and meeting the personal needs of emergency responders are essential for a timely and effective emergency response on the ground. In conclusion, this case once again demonstrated the importance of disaster preparedness that encompasses all components of medical disaster management.

Author contributions. I.T. designed and managed the study. I.T., P.Ş., and B.B. conducted the interviews. I.T., P.Ş., and B.B. drafted the manuscript. P.Ş. performed the data analysis. A.G. participated in the planning and supervised the work. A.G. also assisted in the interpretation of the results. All authors discussed the results and commented on the manuscript.

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