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The Challenges Experienced by Emergency Medical Services Workers in a Massive Disaster Due to Resource Scarcity—the Case of the Kahramanmaraş Earthquakes

Ahmet Hamdi Alpakan[1,2], Ali Ekşi[3] and Süreyya Gümüşsoy[3]

[1]Graduate School of Health Sciences (Disaster Medicine PhD candidate), Ege University, İzmir, Türkiye; [2]Gülhane Vocational School of Health, University of Health Sciences, Ankara, Türkiye and [3]Atatürk Health Care Vocational School, Ege University, İzmir, Türkiye

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Corresponding author:
Ahmet Hamdi Alpakan;
Email: ahmethamdi.alpakan@sbu.edu.tr

Abstract

Objective: The study aims to explain the challenges experienced by Emergency Medical Services workers in a massive disaster due to resource scarcity.

Methods: In this qualitative study, in-depth interviews were conducted with 14 Emergency Medical Services workers in the region within the first 72 hours of the Kahramanmaraş Earthquakes. Participants were determined by snowball sampling method, and data were collected using a semi-structured interview form. Collected data were evaluated using descriptive and content analysis methods.

Results: When the data were analyzed, the difficulties experienced by the participants were covered in two main themes and eight sub-themes. The main themes were physical and managerial challenges, and the sub-themes were nutrition, shelter and adverse weather conditions, hygiene, safety, sleep shortage and exhaustion, operational, logistics and transportation, communication and coordination.

Conclusion: The findings suggest that challenges in meeting the basic physical needs of Emergency Medical Services workers during massive disasters may reduce the overall effectiveness of response efforts. Ensuring their physical safety, particularly in large-scale earthquakes that cause severe structural damage, emerges as a persistent concern. Disaster preparedness efforts should more carefully consider the fragility and vulnerability of high-risk zones when developing national response plans.

Introduction

On February 6, 2023, 2 devastating earthquakes (Mw 7.7 and Mw 7.6) struck southeastern Türkiye, resulting in more than 50,000 deaths and widespread destruction across 11 provinces. Emergency Medical Services (EMS) were among the first responders, working under challenging conditions. While much of the existing disaster literature focuses on victims, limited empirical research exists on the experiences of EMS workers who operate at the frontline of catastrophic events.[1]

Previous research on large-scale disasters, such as the Great East Japan, Wenchuan, and Haiti earthquakes, has documented how infrastructure damage, resource scarcity, and coordination problems undermine effective responses.[1–3] However, despite this growing body of evidence, limited systematic data are available from Türkiye, a disaster-prone country with a unique EMS structure. Following the Kahramanmaraş earthquakes, preliminary field reports from the Emergency Medicine Association of Türkiye indicated severe shortages in logistics and coordination,[4] yet comprehensive qualitative insights from EMS workers remain scarce. Moreover, a recent systematic review highlighted that medical rescue teams across various disaster contexts face organizational, logistical, individual, and communication-related challenges, underscoring the global relevance of findings.[5]

This study, therefore, aimed to describe the challenges faced by EMS personnel during the 2023 earthquakes and provide insights to inform disaster preparedness and response planning.

Methods

A qualitative phenomenological study was conducted. Fourteen EMS workers who served within the first 72 hours after the earthquakes were recruited through purposive and snowball sampling. Semi-structured interviews were conducted online between April and August 2023 (Table 1). All interviews were audio-recorded, transcribed verbatim, and analyzed through inductive content analysis.

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Table 1. Descriptive information of the participants

Participant	Gender	Age	Professional experience (years)	Disaster experience	Arrival time to disaster area
P1	M	36	18	No	30th hour
P2	M	31	10	Yes	12th hour
P3	F	36	18	Yes	12th hour
P4	M	40	20	Yes	70th hour
P5	M	39	17	No	4th hour
P6	F	28	10	Yes	6th hour
P7	M	26	5	Yes	24th hour
P8	M	33	11	Yes	12th hour
P9	M	42	22	Yes	10th hour
P10	F	27	6	Yes	30th hour
P11	M	39	16	Yes	8th hour
P12	M	30	8	No	12th hour
P13	F	42	23	Yes	12th hour
P14	M	39	16	Yes	16th hour

Two researchers independently coded the transcripts. Codes were grouped into categories, and themes were finalized through a consensus process. Representative quotes were selected to illustrate key findings. Ethical approval was obtained from the Ege University Scientific Research Ethics Committee (approval no: 2023-1075). Written informed consent was obtained from all participants.

Results

Two main themes and 8 sub-themes emerged (Table 2).

Participants consistently reported a lack of access to food and drinking water, severe shelter and hygiene problems, and exposure to cold weather. Many had to sleep in ambulances due to the absence of safe accommodation. Safety risks were evident, as EMS workers often entered unstable buildings to retrieve medical supplies or rescue victims. Fatigue from prolonged work without rest impaired concentration and decision-making.

Organizational issues included insufficient medical and rescue equipment, logistical delays due to damaged infrastructure, and significant communication failures. For example, overlapping dispatches of multiple teams to the same site were reported, while other areas remained underserved.

Table 2. Themes and sub-themes

Themes	Sub-themes
Physical Challenges	Nutrition
	Shelter and Adverse Weather Conditions
	Hygiene
	Security
	Insomnia and Fatigue
Managerial Challenges	Operational
	Logistics and Transportation
	Communication and Coordination

Representative quotes:

"Ambulance crews had to sleep in their vehicles due to lack of shelter (Female, aged 36, arrival at the 12th hour)."

"When the second earthquake hit, we were on top of the ruins … we could have been trapped under the debris. That was the moment I was most frightened (Female, aged 28, arrival at the 6th hour)."

"We rescued about 60-70 casualties in 6 hours, but we could not transfer them. The number of ambulances was enough, yet the collapsed buildings blocked the roads (Male, aged 39, arrival at the 16th hour)."

"Communication was disrupted, leading to multiple teams being dispatched to the same case (Female, aged 27, arrival at the 30th hour)."

Limitations

This qualitative study included only 14 participants, and findings cannot be generalized. Results reflect the experiences of EMS workers in one disaster context. Responses were based on participants' subjective perspectives, which may vary across individuals.

Discussion

This study highlights that EMS workers during the Kahramanmaraş earthquakes faced both physical and organizational challenges that significantly limited their ability to respond effectively. These findings are consistent with prior disaster research, which emphasizes how unmet basic needs, fatigue, and poor coordination undermine emergency response.

International literature reinforces these results. Comparable findings have also been reported in South Korea, where EMS crews described heavy stress, organizational inefficiencies, and insufficient resources as key barriers undermining both disaster preparedness and the effectiveness of response.[6] A recent systematic review further emphasized that frontline health care workers frequently experience burnout during disasters, with negative consequences for their physical and mental health, work performance, and quality of care.[7] Similar challenges were documented in the United Kingdom following mass casualty incidents[8] and in Iran, where EMS staff reported logistical and organizational constraints.[9] Consistent with these observations, a systematic review synthesizing evidence

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from multiple disaster settings identified 6 main categories of challenges for medical rescue teams, including organizational, logistical, and health-related barriers, which closely mirror the themes found in our study.[5] Beyond these structural barriers, prior research also shows that their perceived preparedness and institutional support strongly influence health care providers' willingness to work during disasters.[10]

The implications for Türkiye are noteworthy. EMS workers demonstrated remarkable commitment; however, specific structural gaps constrained the overall response capacity. Future national disaster plans may benefit from incorporating strategies to enhance responder safety and well-being, while also strengthening logistics and communication systems. Addressing these areas could contribute to greater resilience in the face of future catastrophic events.

Conclusion

The findings indicate that in massive disasters, resource scarcity and the inability to meet basic physical needs negatively affect the performance and effectiveness of EMS workers within the response system. Ensuring the physical safety of EMS personnel emerges as a persistent challenge, particularly in large-scale earthquakes that cause severe structural damage. Many EMS workers were observed to operate in unsafe environments, often surrounded by debris and unstable infrastructure. The lack of resilient physical infrastructure, frequently discussed in the literature as a factor that amplifies disaster impact, also hinders the development of effective solutions to resource shortages. Therefore, disaster preparedness efforts should more comprehensively assess the vulnerabilities and structural fragility of high-risk areas when developing national response and preparedness plans.

Author contribution. AHA: Conceptualization; data collection; analysis; writing. AE: Conceptualization; methodology; analysis; writing; supervision; and reviewing. SG: Analysis; reviewing.

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