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Disaster management following the great Kahramanmaraş earthquakes in 2023, Türkiye

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Abstract. Türkiye experienced devastating earthquakes in Kahramanmaraş on 6 February 2023, making it one of the most severe tragedies of the century. This study analyzed the Turkish government's disaster response strategies with respect to these earthquakes, focusing on crisis communication, response capacity, and crisis management. The study utilized qualitative methodology and purposive sampling, with the government-affiliated Disaster and Emergency Management Presidency (AFAD) as a sample. The purposive sampling method involves selecting a representative sample that can be analyzed effectively, allowing solutions to be derived from a problem. Starting on 6 February 2023, official tweets and press release statements from the AFAD over 25 d were analyzed. AFAD's initial press statement was released 13 min after the earthquake, and the declaration of a level four disaster occurred only 86 min after the earthquake, demonstrating that state institutions were fully aware of the severity of the situation. The presence of over 270 000 volunteers in the disaster area highlights an incredible spirit of solidarity. However, coordinating so many volunteers in the disaster zone presents significant difficulties. Moreover, there were profound challenges regarding adequate and timely search and rescue capacity, the coordination of all response operations, and the management of information on social media. The results indicate to the global community that despite extensive rescue and response capabilities in disaster management, there are still challenges with respect to preventing loss of life. The primary focus should be on disaster prevention and mitigation efforts, and design and construction implementation should align with seismic provisions. Furthermore, social media played a pivotal role in information management and coordination in the aftermath of the earthquakes.

1 Introduction

Disasters have grave repercussions, causing loss of life, injuries, and significant disruptions to daily life (UNDRR, 2023). The impact extends beyond physical and environmental losses, with economic and social implications that can overwhelm a society's coping mechanisms. Moreover, vulnerability and preparedness are crucial in preventing dangers from becoming catastrophic (IFRC, 2024). According to the Emergency Events Database (EM-DAT) report, a staggering 399 disasters were recorded globally in 2023, resulting in the loss of 86 473 human lives and affecting around 93 million people through physical, economic, and social damage. The economic impact was equally astounding, amounting to USD 202 billion (EM-DAT, 2024). Extreme-weather events, such as heat waves, floods, droughts, and earthquakes, have led to significant losses. In Europe, lives were lost to extreme temperatures, while approximately 89 million people in Africa were affected by droughts. The number of fatalities in 2022 was triple that in 2021, making it the year with the highest number of deaths since 2016 (EM-DAT, 2023).

Crisis management involves a variety of proactive measures aimed at addressing crises and minimizing their impact (Al Eid and Arnout, 2020). Essentially, it involves taking steps to prevent or reduce the adverse effects of a problem, with the ultimate aim of safeguarding the organization, its stakeholders, and the industry as a whole (Coombs, 2015b). Effective crisis management requires immediate action to save lives, protect property, and preserve the environment (Panneer et al., 2021). During the crisis management process, a chaotic period is expected to occur following events. This is due to various factors, such as the nature of the event, available resources, and environmental conditions (Jin et al., 2019). In addition, several other challenges may emerge dur-

ing crisis management, including corporate threats, unexpected incidents, and the need to make quick decisions under time constraints (Albtoush et al., 2011). One must possess expertise, courage, decisiveness, innovativeness, leadership skills, and insight to tackle these intricate issues (Paturas et al., 2016). Moreover, it is crucial to establish a culture of reliability, primarily during times of crisis (Meyer et al., 2021). Consequently, to navigate a crisis effectively, one must grasp its significance, generate original ideas, take brave actions, and be prepared to adapt to changing circumstances (Farazmand, 2001).

Effective crisis management requires proper crisis communication, including information and media management, supportive action, and stakeholder outreach (Sanjeev et al., 2021). Crisis communication aims to protect, support, and guide the public and emergency services throughout disaster management's response and recovery phases (Fokaefs and Sapountzaki, 2021). Organizations need to prioritize communication with the public and ensure they provide relevant information and guidance on staying safe (Mitcham et al., 2021). This approach, known as the ethical response, involves delivering accurate and timely instructions and updates, ensuring that the public is well-informed and prepared during a disaster (Coombs, 2015a). Furthermore, organizations should take accountability for crises in proportion to their responsibility. If the public holds them accountable, they should cooperate by apologizing, making restitution, and acknowledging responsibility (Claeys and Coombs, 2020; Sisco, 2012).

In times of disaster, it is imperative to apply specific principles in crisis communication to manage and address the situation effectively (Eldridge et al., 2020). One of the primary principles is that disaster management organizations should be the first to provide information in such scenarios, as delays can result in stakeholder skepticism and reputational damage (Bernstein, 2022; Claeys and Coombs, 2020). During a crisis, it is essential to maintain a consistent message to prevent confusion (Jones et al., 2017). Multiple information sources can create conflict and uncertainty (MacKay et al., 2022). These conflicts and uncertainties in disasters can be avoided by centralizing the communication procedure (Field, 2018). Furthermore, it is crucial to be transparent during crises. Concealing negative news may lead to significant adverse publicity in crisis messages (Kuipers and Schonheit, 2022; Strawser, 2016).

During crises, the ability to access accurate information quickly is crucial for effective communication. Therefore, social media platforms have become essential tools in emergencies, enabling decision-makers to share vital information and reduce evaluation time swiftly (Fenta et al., 2024). With succinct posts directly from primary sources and links for further details, social media enables the rapid dissemination and processing of disaster-related information (White, 2012). Social media is a versatile tool that serves various needs, especially during crises. Some rely on it to stay informed and seek assistance, while others use it to stay connected with loved ones and receive much-needed emotional support (Muniz-Rodriguez et al., 2020). Regardless of the reason, social media is a convenient and valuable tool for obtaining unfiltered updates during times of crisis (Fraustino et al., 2018). People often rely on their loved ones in crises and disasters for important information about safety, food, shelter, transportation, and medical help (Mehta et al., 2017). In addition, social media platforms can become a valuable source of information during emergencies, as anyone can share important updates and knowledge with others in real time (Hiltz and Kushma, 2014; Saroj and Pal, 2020). Therefore, social media has become increasingly important during crises and emergencies, as it can play a crucial role in facilitating communication and coordination (Sarı and Özer, 2024).

After earthquakes, international search and rescue teams become necessary when national capacity is exceeded. However, in some situations, these teams may only support early recovery efforts due to time constraints and the external circumstances in the affected area (Okita et al., 2022). Therefore, efforts to minimize disaster-related morbidity and mortality through disaster reduction are crucial and impactful (Rom and Kelman, 2020). Furthermore, disaster management demands a focus on prioritizing mitigation and preparedness to significantly decrease the need for response and enhance the capacity to respond effectively (Petal et al., 2004). Disaster risk reduction aims to prevent hazards from causing harm and disrupting lives, aiming to turn potential disasters into non-events.

2 The great Kahramanmaraş earthquakes in 2023

Türkiye is located on the seismically active Anatolian Plate and has experienced a long history of substantial earthquakes (Altunel et al., 2024). Unfortunately, between 1900 and 2023, Türkiye was struck by 269 earthquakes, resulting in loss of life or damage (AFAD, 2023). The great Kahramanmaraş earthquake of 2023, the Erzincan earthquake of 1939, and the Gölcük-centered Marmara earthquake of 1999 are among the most devastating disasters in the country (SBB, 2023). Two powerful earthquakes (GLIDE: EQ-2023-000015-TUR) with a moment magnitude (M_w) of 7.7 and 7.6 (M_w of 7.8 and 7.5, respectively, based on USGS) struck Türkiye on 6 February 2023 at 04:17 and 13:24 local time (LT). The epicenters were located in Pazarcık and Elbistan, both in Kahramanmaraş (AFAD, 2023; USGS, 2023). The Emergency Events Database (EM-DAT) identified this event as the most catastrophic event of the year in terms of both mortality and economic damage (EM-DAT, 2024).

It can be observed from Fig. 1 that earthquakes occur in close proximity to the major fault systems. The quakes were felt strongly in numerous cities, including Kahramanmaraş, Hatay, Adıyaman, Gaziantep, Malatya, Kilis, Diyarbakır, Adana, Osmaniye, Şanlıurfa, and Elazığ, resulting in loss

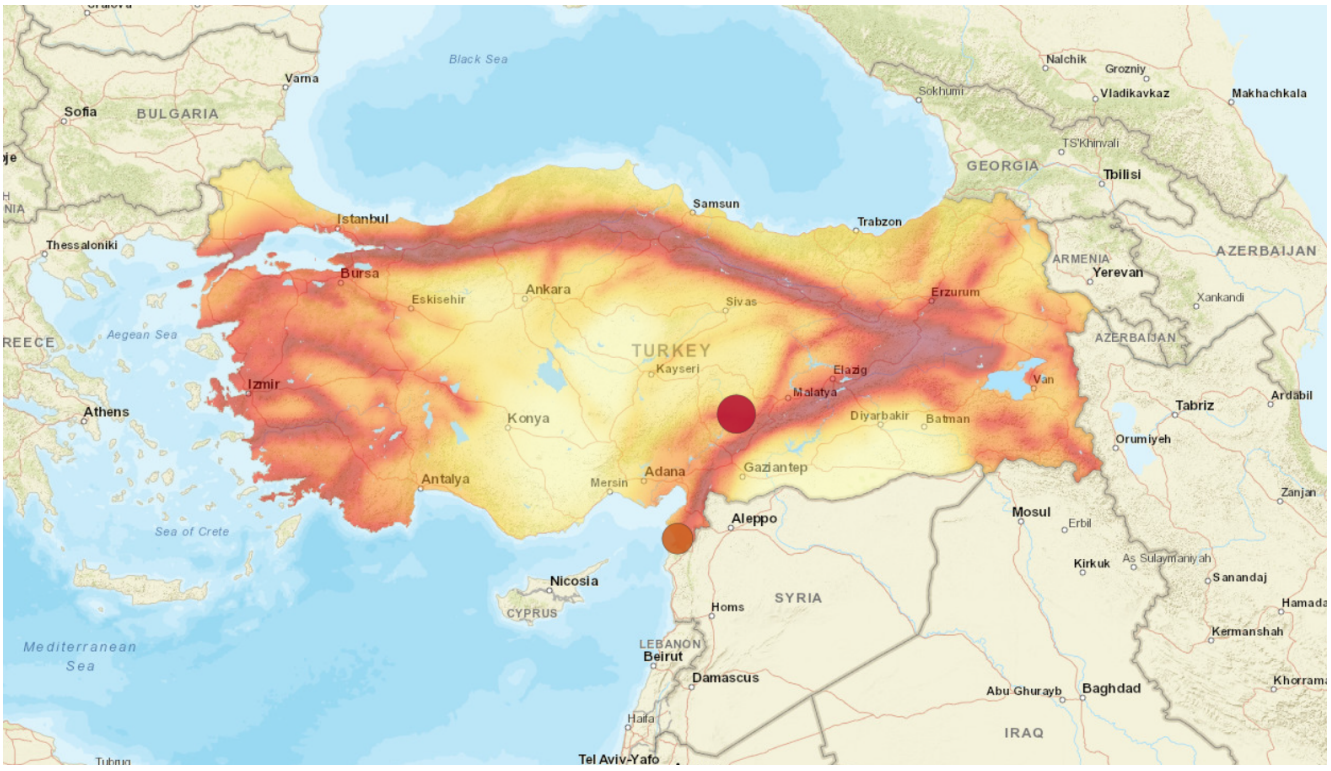

Figure 1. Epicenters in the seismic hazard map of Türkiye (source: https://deprem.afad.gov.tr/map, last access: 8 December 2024).

of life and significant damage (AFAD, 2023; USGS, 2023). The devastating earthquakes resulted in the tragic loss of over 50 000 lives, marking the most destructive seismic sequence of aftershocks in modern Turkish history (Avcil et al., 2023; Binici et al., 2023; Hussain et al., 2023). Furthermore, it was observed that the initial earthquake caused more significant damage in Kahramanmaraş and Hatay, while the following earthquake resulted in more destruction in Malatya (AFAD, 2023).

Contained within Table 1 are comprehensive details pertaining to the devastating impact of the earthquakes. Alongside the tragic loss of life, the aftermath resulted in over 100 000 injuries, negatively impacting more than 14 million individuals and causing damage to over 700 000 buildings, including cultural sites (Kocaman, 2023). Moreover, an underwater landslide caused a small tsunami, and it is estimated to have caused seafloor deformation following the tragic aftershocks (Heidarzadeh et al., 2023). As a result of the collapsed buildings, a considerable amount of household and construction waste was produced (Demir and Dinçer, 2023). According to current estimates from the Turkish government, the extensive economic loss exceeded USD 103 billion, accounting for approximately 9 % of the country's national income in 2023 (SBB, 2023).

A state of emergency was declared for 3 months in earthquake-affected provinces, starting 8 February 2023, under Article 119 of the Constitution to expedite search and rescue efforts. The objective was to undertake critical and pressing tasks, such as fulfilling essential requirements, demolishing heavily damaged structures that pose a hazard, and limiting entry to areas where unstable buildings are present, all within the bounds of the state of emergency (SBB, 2023). However, during the rescue operation, transportation to the earthquake area faced severe problems, particularly with respect to communication, organization, and coordination (TMMOB, 2023). A winter storm impeded the rescue operation in the earthquake zone. The storm exposed displaced people to sub-zero temperatures and blocked transportation routes with heavy snowfall (Yılmaz et al., 2023). This hindered search and rescue efforts and delayed the delivery of timely aid to the affected regions (Hussain et al., 2023). Moreover, according to 2021 data, 1.5 million people residing in 11 affected provinces earned below the national income average (TURKSTAT, 2021). It became more challenging to deal with the aftermath of the earthquake due to poverty.

The devastating earthquakes have exposed several shortcomings, including inadequate compliance with seismic provisions in the design and construction of buildings that suffered the most significant damage (Ivanov and Chow, 2023). Investigations indicate that non-compliance with regulations and essential construction principles compromised the structural integrity of these buildings (Mertol et al., 2023; Sagbas et al., 2023). It was clear that some of the commer-

Table 1. The consequences of the great Kahramanmaraş earthquakes.

Damage to people		Damage to buildings	
Total loss of life	50 783	Total number of buildings in affected area	2 332 841
Number of injured	107 204	Number of buildings assessed for damage	1 712 182
Number of people affected	14 013 196	Number of collapsed buildings	38 901
Number of disabled people affected	2 511 950	Demolishing needed urgently	17 491
Number of provinces affected	11	Heavily damaged	179 786
Total economic loss (approximate)	USD 103.6 billion	Moderately damaged	40,228
		Lightly/slightly damaged	431 421

Source: created by the author using government data (government of Türkiye, 2023).

cial buildings had not undergone seismic retrofitting on their ground floors (TMMOB, 2023). In addition, some of the main reasons for the significant destruction include low material strength and the lack of engineering retrofitting (Avcil et al., 2023; Mercimek, 2023; Papazafeiropoulos and Plevris, 2023; Zengin and Aydin, 2023). Several collapsed buildings resulted from inadequate seismic retrofitting, substandard workmanship, and the hiring of unlicensed personnel during construction (AFAD, 2023).

3 Methodology

3.1 Study design

This study focused on the disaster management process after the great Kahramanmaraş earthquakes on 6 February 2023. The post-earthquake disaster management process, including crisis communication, response capacity, and crisis management, was examined. The research was conducted using a qualitative case study method, which is a qualitative research methodology. This approach enables researchers to understand lived experiences in depth by examining situations, perspectives, attitudes, emotions, and perceptions. This method prioritizes the process over the outcome or output, allowing for a more comprehensive analysis (Glesne, 2016). The analysis involved examining the statements made by the Disaster and Emergency Management Presidency (AFAD) on its official X (formerly known as Twitter) account and in press releases during the 25 d following the earthquake up to 2 March 2023. This study employed purposive sampling, a method in which the researcher selects a representative sample that can be effectively analyzed and from which solutions to a problem can be derived (Merriam and Tisdell, 2016). Purposive sampling is essential for qualitative research, as it enables an in-depth analysis of specific cases (Patton, 2015). The study selected AFAD, a government-affiliated organization in Türkiye that is responsible for crisis and disaster management, as a sample. This selection was made because AFAD serves as the sole institution responsible for responding to disasters and coordinating disaster efforts in the country. The response process information is publicly available exclusively through AFAD, as all other response institutions provide their information to AFAD, which issues public statements during disasters. Throughout the duration of the disaster, every statement issued by AFAD was meticulously documented on a 24 h basis. Being responsible for disaster management as a criterion for purposive sampling reflects the study's purpose and guides the selection of information-rich cases (Merriam and Tisdell, 2016).

3.2 Research questions

This study has two main research questions:

- How did AFAD respond to the disaster using a crisis management and communication approach?
- How did AFAD manage the capacity required for disaster response?

3.3 Data collection and analysis

Data collection began on 6 February 2023, when the earthquakes took place, and continued for 25 d, ending on 2 March 2023. AFAD issued its last press release on crisis management on 2 March 2023, after which data collection was terminated. During the 25 d, the total number of tweets was 1347, and press statements accounted for 3842 words. The data were analyzed using a thematic analysis method, which involves creating themes and categories (Guest et al., 2014). During the analysis, the MAXQDA qualitative analysis program was used to apply code cloud and MaxMaps code model tests. The presented results include themes, categories, and codes derived from the analysis. The data analysis followed the steps of coding, creating sub-themes and themes, managing codes and themes, and explaining and interpreting results. The study was reported according to the COREQ checklist (Tong et al., 2007).

3.4 Trustworthiness

In qualitative research, the researcher's credibility is of great importance, and the research outcomes should meet the criteria of credibility, verifiability, and transferability established

Table 2. The inter-coder agreement test.

		Coder 1		
		1	0	
Coder 2	1	$a = 5904$	$b = 549$	6453
	0	$c = 549$	0	549
		6453	549	7002

P (observed) $= P_o = a/(a+b+c) = 0.84$.
P (chance) $= P_c = 1/$Number of codes $= 1/38 = 0.03$.
Kappa $= (P_o - P_c)/(1 - P_c) = 0.84$.
If there is an unequal number of codes per segment or if only one code is to be evaluated: P (chance) $= P_c =$ Number of codes/(Number of codes $+ 1)2 = 0.02$.
Kappa $= (P_o - P_c)/(1 - P_c) = 0.84$.

by Guba and Lincoln, which are followed by researchers (Guba and Lincoln, 1982; Herr and Anderson, 2015; Krefting, 1991; Merriam and Tisdell, 2016). Qualitative research utilizes long-term interaction, expert review, inclusion and exclusion criteria, and inter-coder agreement to ensure validity and reliability (Creswell, 2002; Shultz et al., 2020). This study used expert opinions from statisticians who specialize in qualitative research and an inter-coder agreement test to ensure its reliability. This test function allows for a comparison of the coding done by two independent coders (see Table 2).

This study achieved a kappa value of 0.84 in the inter-coder agreement test, which measures the degree of agreement between coders and creates a statistical value that indicates the agreement's value (Houser, 2016). The kappa value can be analyzed as a percentage. A value between 0.41 and 0.75 is sufficient, and a value greater than 0.75 is considered ideal (Shultz et al., 2020).

3.5 Ethics

This study did not require ethics approval as the data were collected from publicly available official social media accounts and press release offices.

4 Results

The results are presented by evaluating all statements made by official sources during the 25 d following the disaster, focusing on three primary categories: crisis communication, response capacity, and crisis management. The crisis communication category was evaluated based on the speed and frequency of statements; the response capacity category was evaluated based on quantity; and the crisis management category was evaluated based on response, coordination, and shelter. Lastly, a word cloud of all the statements was provided. Figure 2 highlights the statements issued by AFAD immediately following the earthquake. The first 10 instances of information sharing, including social media and press releases, were analyzed based on frequency and timing. After these 10 statements, information sharing continued regularly. The first 72 h after a disaster are critical for individual survival and preventing secondary victimization (Codreanu et al., 2017; Sakurai et al., 2014). Furthermore, following crises and disasters, timely and rapid dissemination of information is crucial for effective crisis communication (Chen et al., 2021; Gurman and Ellenberger, 2015; Murthy et al., 2019). Responding to a disaster promptly and sharing timely information are essential for saving lives and ensuring effective crisis communication. The inclusion of response time in this study is based on this reason.

Immediately following the earthquake, AFAD began issuing statements on its website and official X account. After the initial 10 explanations, a specific order was established for the subsequent explanations, and the first 10 were assessed based on their speed and regularity. According to the data presented in Fig. 2, the initial press statement was issued 13 min after the earthquake at 04:17 LT. In contrast, it took 37 min for the first social media statement to be released. Notably, the average time between each statement for the first 10 press releases was nearly 3 h. Dissimilarity, the average time between each statement for the first 10 X (Twitter) social media statements, was roughly 50 min. It was officially communicated to the public after 86 min that the disaster had reached a level four severity, surpassing the country's disaster response capacity to handle it. The figure shows that statements on social media were made at more regular intervals. However, press releases were issued at more extended intermissions after the third statement.

Figure 3 shows the response capacity during the first 24 h and the days following the earthquakes. In the aftermath of the earthquakes, response efforts in the disaster area were closely monitored over 25 d in terms of quantity and timing. These efforts encompassed search and rescue personnel, volunteer rescue teams, mobile food and bakery services, shelter, and logistical capabilities, all of which are crucial in the wake of a disaster. The timing of these efforts was categorized into the first 24 h, the first 72 h, the first 120 h, and the end of the operation, all of which hold significance in disaster response. Search and rescue personnel reached 13 740 within the first 24 h, over 24 000 within the first 72 h, and more than 31 000 within the first 120 h, ultimately totaling 35 250 by the end of the operation.

The initial report from AFAD did not include the number of volunteer search and rescue personnel in the first 10 h. However, the count stood at 9876 within the first 24 h. By the end of the operation, it was noted that over 270 000 volunteers had participated in search and rescue efforts. Following the disaster, 12 mobile kitchens were swiftly dispatched to provide food service within the first 6 h, a testament to the immediate provision of essential services. This number had increased to 369 by the end of the operation. The number of tents following the disaster remained a topic of prolonged debate. Official reports indicated that 19 772 tents were dis-

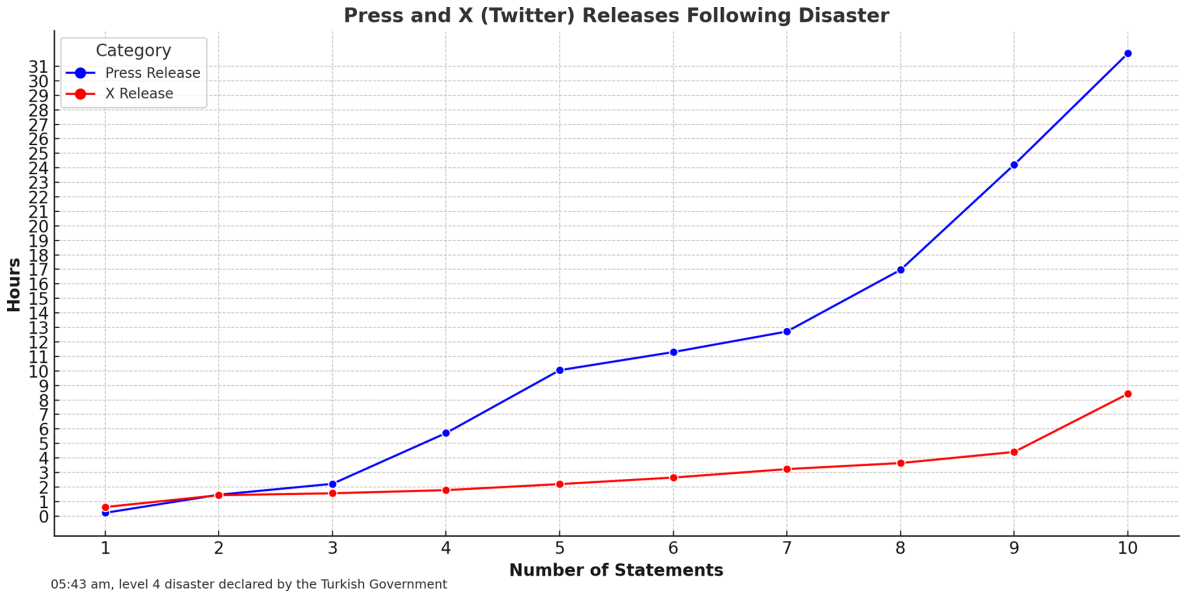

Figure 2. Time-based distribution of the initial 10 statements made after the earthquakes. Source: created by the author using government data (AFAD, 2023; government of Türkiye, 2023).

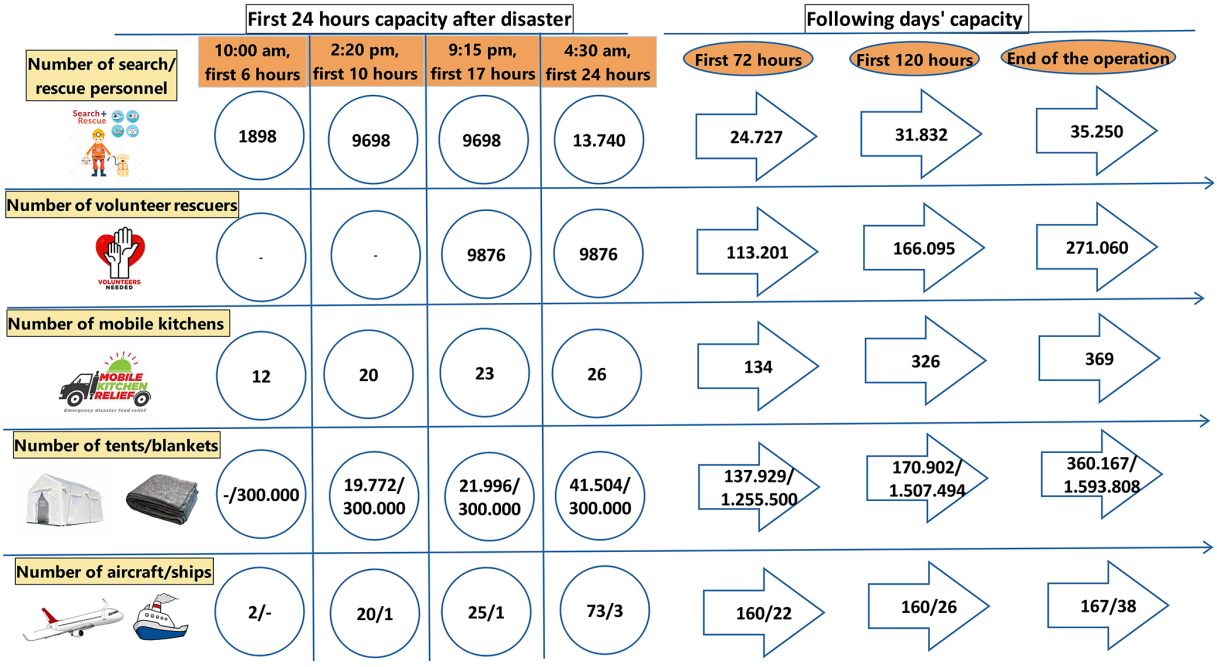

Figure 3. Disaster response capacity. Source: created by the author using government data (AFAD, 2023; government of Türkiye, 2023).

patched to the area within 10 h post-disaster. Within the first 24 h, this figure rose to 41 504. Following a 25 d search and rescue operation, the total count of tents reached 360 167. Regarding logistics, 167 aircraft and 38 ships were utilized in the operations.

The analysis in Fig. 4 examined all post-earthquake statements related to crisis management. Following the disaster, all statements prominently featured codes related to response, coordination, shelter, and meals. As a result, these codes were evaluated collectively without any modifications to the documents. This approach explains why shelter and meals, along with response efforts, are displayed together in the exact figure. Consequently, these categories were also integrated into the crisis management assessment. The most prominent codes related to the response phase were search and rescue, coast guard, and navy, followed by the number

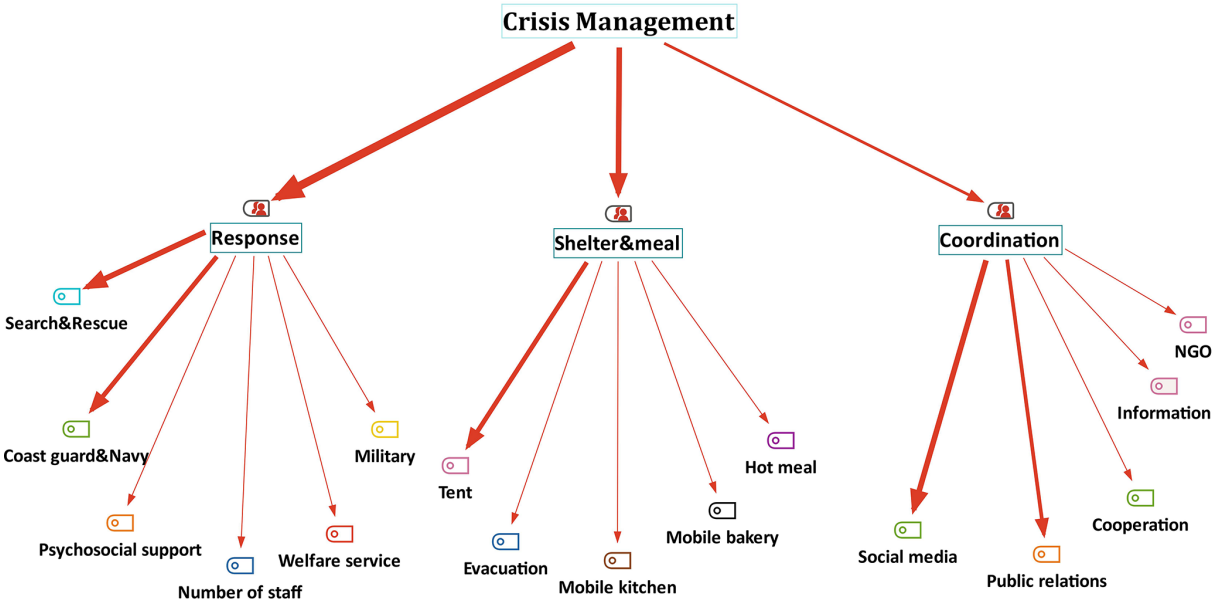

Figure 4. Post-disaster crisis management processes. Source: created by the author using the MAXQDA analysis program. The arrows' thickness denotes the codes' intensity.

of rescue personnel, army, psychosocial support, and welfare service codes. Within the shelter and food category, the most prevalent code was "tent", followed by evacuation, mobile kitchen, mobile bakery, and hot meal, all with equal intensity. Social media emerged as the most predominant code in the coordination category, followed by public relations and information, cooperation, and NGO.

The data presented in Fig. 5 clearly illustrate the predominant total codes referenced in the earthquake's aftermath. Covering a 25 d period from 6 February 2023, when the earthquake occurred, to 2 March 2023, a thorough analysis of 37 press releases and 1347 social media statements was conducted using a rigorous qualitative analysis program. The significance of this figure lies in its ability to provide a comprehensive overview of the operational processes during the 25 d following the disaster without any external interference. The subsequent analysis revealed the most frequently used codes in the official statements during this time, which included search and rescue, coast guard, military, shelter, tent, evacuation, mobile kitchen, and the number of personnel involved in the rescue efforts.

5 Discussion

In times of crisis, timely and consistent press releases play a crucial role in effective communication. Following the Kahramanmaraş earthquake that occurred at 04:17 LT, the first press release was issued just 13 min later, with a social media post following 37 min later. While 37 min may seem like an impressive response time for social media, it falls short compared to the speed of the press release. Gurman and Ellenberger (2015) suggested that organizations are increasingly using X (formerly known as Twitter) to connect with people around the globe. The platform's fast and transparent communication channels have also been vital in managing crises, allowing organizations to provide timely updates and offer assistance to those in need. In their study, Murthy et al. (2019) stated that rapidly disseminating any emergency or crisis information is fundamental to information management. Moreover, the alerts should contain clear instructions for individuals in the affected area to follow during an emergency. Timely and rapid dissemination of official social media information and truthful explanations are essential following a significant public crisis (Chen et al., 2021; Genes et al., 2014; Sari, 2024). X posts following such events are essential for enabling communication between individuals, local government officials, and the community (Jung and Moro, 2014).

Upon analyzing the first 10 statements released after the earthquake, it was found that a statement was made on average every 3 h. In contrast, the first 10 statements on social media (X) were made every 50 min. The Centers for Disease Control and Prevention (CDC) stresses the importance of quick and consistent communication during crises, as failure to do so can lead to misinformation and disinformation. Their study suggests that simple and reliable messages should be shared frequently at regular intervals (CDC, 2023a). Jones et al. (2017) argued that when official channels do not provide information regularly, people may be exposed to rumors that fill the information void. Moreover, periodically releasing timely and substantial updates during a crisis is crucial for

Figure 5. Total code cloud. Source: created by the author using the MAXQDA analysis program. The most intense codes are located in the middle.

reducing distress. Lee (2008) acknowledges that the foundation of disaster communication is the disclosure of accurate news to the public without delay. Kryvasheyeu et al. (2016) highlighted that sharing information on social media during disasters enhances early warning systems and supports emergency managers in real-time monitoring and assessment of the crisis. Using X or other communication mechanisms for rapid information sharing is essential, and it also serves as a valuable tool for official entities to coordinate relief and response activities (David et al., 2016; Linardi, 2016). After the Kahramanmaraş earthquake, it became clear that social media was officially utilized to disseminate operational information. However, various arguments and criticisms emerged regarding the operational process, highlighting issues with information management on social media.

From the very beginning of the earthquake, numerous response teams were dispatched to the affected area, particularly those specializing in search and rescue efforts. As of 10:00 LT, 1898 search and rescue personnel were actively working in the field within the first 6 h of the disaster, increasing to 13 740 by the end of 24 h. In fact, by the end of the rescue operation, the total number of rescue workers had exceeded 35 000, with close to 270 000 volunteer rescuers assisting the cause. According to the International Search and Rescue Advisory Group (INSARAG) disaster preparedness and response guide, urban search and rescue (USAR) teams are categorized as light, medium, and heavy, with light-level teams requiring 17–20 personnel, medium-level teams requiring 42 personnel, and heavy-level teams requiring 63 personnel. Teams of the medium level can work around the clock, 7 d a week (INSARAG, 2020). According to reports, over 38 000 buildings were destroyed during the recent earthquake. Assuming that one mid-level USAR team is stationed in each building, it becomes evident that a significant number of search and rescue personnel would be necessary. However, by the conclusion of the operation following the earthquake, only approximately 35 000 personnel had been mobilized. These figures indicate that assembling enough search and rescue personnel is technically impossible. There are also some controversial aspects regarding the deployment of USAR teams. Bartolucci et al. (2019) assert that the effectiveness of USAR teams is closely tied to the speed at which they become operational; deployments yield limited results in terms of lives saved. Okita et al. (2022) conducted a study on deploying international USAR teams after an explosion and proposed that these teams should be adaptable and flexible to assist with early recovery efforts after completing the search and rescue phase. Rom and Kelman (2020) emphasized the importance of disaster risk reduction in reducing disaster-related mortality due to the limited capacity of search and rescue to save lives after earthquakes, as it takes time for them to become operational. Disaster management revolves around prioritizing mitigation and preparedness to effectively reduce the need for response and improve the ability to respond (Petal et al., 2004). Enhancing building codes and their enforcement, as demonstrated by successful examples like Japan, along with retrofitting older structures, could significantly reduce the number of deaths and injuries from earthquakes, thereby lowering the need for search and rescue efforts (Bilham, 2010; Booth, 2018).

In the 25 d following the earthquakes, AFAD's statements emphasized various areas, including search and rescue operations. However, they did not explicitly acknowledge any shortcomings or inadequacies in their earthquake response. CDC (2023b) underlines the necessity of clearly stating which resources are adequate and which are insufficient following a disaster. This is a vital component of effective crisis communication. Meyer et al. (2021) highlight a tendency among disaster managers to avoid addressing shortcomings and inadequacies, opting instead to associate complex processes with the nature of disasters. They suggest that the complexity and difficulty of disaster response are to be expected. Sisco (2012) emphasizes the need for organizations to acknowledge their flaws and issue apologies during crisis management to preserve mutual trust and corporate reputation. In particular, during crisis management, sincere apologies from responsible institutions prevent situations from worsening (Claeys et al., 2010).

Upon analyzing the post-earthquake statements made in the context of crisis management, it was found that the most critical response categories were search and rescue, coast guard, and navy codes. The need for a search and rescue code was evident given the occurrence of the disaster after an earthquake, resulting in the collapse of buildings. However, TMMOB (2023) highlighted that after the great Kahramanmaraş earthquake, significant challenges occurred in accessing the affected area during the first 2 d, which hindered search and rescue operations. The coast guard and navy codes were developed to facilitate evacuations and provide shipboard hospitals. Local and national governments frequently call upon military forces to assist affected areas following significant disasters. For instance, the US military and other international militaries have been mobilized to provide disaster relief after significant nature-induced calamities (Bollettino, 2016). Flarity et al. (2022) highlight the significant capacity of military health units to assist overwhelmed civilian health centers during disasters. They also underscore the essential nature of civil and military collaboration in such situations. Following the earthquake, the statements regarding military presence in disaster areas did not contain negative codes. However, it was claimed that it took over 2 d for security and military units to reach the earthquake zones (TMMOB, 2023). Burke (2016) states that military forces significantly contribute to disaster response and humanitarian aid efforts. However, there are critiques among certain publications regarding the involvement of military personnel in disaster response efforts. Malešič (2015) highlights conflicts between civilians and soldiers in disaster areas, focusing on issues like the overwhelming military presence in civilian institutions, negative impacts on civilian culture from military involvement, and the strain that military command can place on civilian organizations.

One critical area that has surfaced within crisis management pertains to shelter and meals. Specifically, there appears to be a pressing need for tents in the shelter category. As outlined in the Türkiye National Disaster Response Plan (TAMP), AFAD is tasked with fulfilling the demand for tents during disasters. At the same time, the Turkish Red Crescent is responsible for providing food assistance (AFAD, 2022). AFAD procures tents from factories owned by the Turkish Red Crescent to meet its tent requirements. However, the media reported that tents were sold during the aftermath of the earthquakes, which caused a stir. As per BBC Turkish, the Red Crescent's sale of tents was met with strong reactions from certain sections of society, leading to criminal complaints being filed (BBC, 2023). AFAD has not addressed this particular issue in its statements.

After the earthquakes, coordination became a key focus in the crisis management process. Social media and public relations were extensively utilized in disaster coordination efforts, followed by cooperation, information, and NGOs. As social media becomes more common during disasters, technological advancements significantly improve communication, coordination, and rapid information sharing across all disaster management stages (Clark and Chongtay, 2020; Mitcham et al., 2021; Sarı and Özer, 2024). In addition, advancements in information technology, such as social media, allow decision-makers to utilize vast amounts of data in disaster management (Zagorecki et al., 2013). The increasing use of social media and technology in disaster management has advantages, but it also raises some problems. These include concerns about the accuracy and usefulness of the data collected and potential ethical issues that may arise (Kaufhold et al., 2019; Mulder et al., 2016; Watson and Rodrigues, 2018). Yan and Pedraza-Martinez (2019) emphasize that social media can significantly assist in gathering and fulfilling aid requests, and Saroj and Pal (2020) stress the significance of social media as a reliable means of communication, even when traditional methods are disrupted by calamities such as earthquakes. After the earthquake, many codes occurred positively under coordination. However, there are critiques that although AFAD is responsible for disaster coordination, it unfortunately failed to fulfill this duty effectively (TMMOB, 2023). Platt and Drinkwater (2016) focused on decision-making in their study following the Van earthquake in Türkiye. They emphasized that AFAD's primary responsibility is to coordinate response and recovery efforts; however, its performance during the first 4 weeks after the earthquake in Van fell short of expectations.

Limitation

This study's data were derived exclusively from official releases and do not include any questions or interactions regarding the statements. It is important to recognize this limitation within the context of the study.

6 Conclusion

This study examined the disaster management strategies of the Turkish government in response to the 2023 Kahramanmaraş earthquakes. Regarding crisis management, despite the country's prompt mobilization, the earthquake caused catastrophic losses, making it the most destructive earthquake Türkiye has faced in the past century. The government issued its initial press statement just 13 min after the earthquake and followed up with a social media announcement 37 min later. While some may argue that this response was slow for crisis communication, the declaration of a level four disaster just 86 min after the earthquake clearly indicated that state institutions were aware of the gravity of the situation. This study effectively illustrates to the global community that despite the existence of extensive rescue and response capabilities in disaster management, there are still challenges with respect to preventing loss of life. Consequently, the primary focus should be on disaster prevention and mitigation efforts. Therefore, regarding earthquakes, it is essential to prioritize the construction of robust infrastructure before disasters strike. Thousands of volunteers in the disaster area highlight an incredible spirit of solidarity. However, coordinating so many volunteers in the disaster zone presents significant challenges. The Turkish Coast Guard and other military forces play a vital role in post-earthquake response efforts, particularly in search and rescue operations, where they can save lives more efficiently. However, criticism has been directed at the delayed response of security and military units, which took over 2 d to reach the affected earthquake zones. Moreover, the study identified areas for improvement in crisis management regarding shelter, particularly in providing tents to meet humanitarian needs rather than selling them commercially. Social media significantly impacted information management and coordination after the earthquakes. Future research should focus on improving information management, addressing the spread of disinformation, and exploring social media leadership's role in disaster management and coordination.

Code and data availability. The data are available to the public, and codes and written text can be shared upon request for scientific purposes.

Competing interests. The author has declared that there are no competing interests.

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