Disaster Management Following the Great Kahramanmaraş Earthquakes in 2023, Türkiye

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Abstract. Türkiye experienced devastating earthquakes in Kahramanmaraş on February 6, 2023, making it one of the most severe tragedies of the century. This study analyzed the Turkish Government's response strategies 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

10 sample. Starting on February 6, 2023, 25 days of official tweets and press statements from the AFAD were analyzed. AFAD's initial press statement was released 13 minutes after the quake, and the declaration of a level four disaster occurred only 86 minutes after the earthquake, demonstrating that state institutions were fully aware of the severity of the situation. The results indicate to the global community that despite extensive rescue and response capabilities in disaster management, there are still challenges to prevent loss of life. The primary focus should be on disaster prevention and mitigation efforts,

15 prioritizing solid building construction and strict control policies. The presence of over 270 thousands volunteer rescuers is a testament to the remarkable spirit of solidarity. Furthermore, social media played a pivotal role in information management and coordination in the aftermath of the earthquakes.

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1 Introduction

Disasters have grave repercussions, causing loss of life, injuries, and significant disruptions to daily life (UNDRR, 2023).
35   The impact extends beyond physical and environmental losses, with economic and social implications that can overwhelm a society's coping mechanisms (Sarı and Özer, 2024). Also, vulnerability and preparedness are crucial in preventing dangers from becoming catastrophic (IFRC, 2023). According to CRED's report, 2023 recorded a staggering 399 disasters globally, 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 202 billion US dollars (CRED, 2024). Extreme
40   weather events like heat waves, floods, droughts, and earthquakes have led to significant losses. In Europe, over 16,000 lives were lost to extreme temperatures, while approximately 89 million people in Africa were affected by droughts. The number of fatalities in 2022 tripled that of 2021, making it the year with the highest number of deaths since 2016 (CRED, 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
45   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). Also, several other challenges may emerge during crisis management, including corporate threats, unexpected incidents, and the need to make
50   quick decisions under time pressure (Albtoush et al., 2011). One must possess expertise, courage, decisiveness, innovation, leadership, and insight to tackle these intricate issues (Paturas et al., 2016). Also, 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).

55   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
60   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 responsibility 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).

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 times of crisis, 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 allows 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). Not only can it be used by victims to share their situation, but it can also be utilized by government officials for effective crisis management (Mendoza et al., 2010).

Following earthquakes, when national capacity is exceeded, international search and rescue teams are necessary. However, due to time constraints and external circumstances, these teams are more valuable and flexible in assisting early recovery efforts (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. This is similar to how preventative medicine intervenes to avoid disease rather than just treating it (Rom and Kelman, 2020).

2 The Most Catastrophic Disaster in 2023

95   Türkiye, situated on the seismically active Anatolian plate, has a long history of significant earthquakes (Government of Türkiye, 2023). Unfortunately, between 1900 and 2023, Türkiye was struck by 269 earthquakes, resulting in loss of life or damage (AFAD, 2023). The 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 magnitudes of 7.7 and 7.6 (Mw of 7.8 and 7.5, respectively, based on

100   USGS) struck Türkiye on February 2nd, 2023, at 4:17 and 13:24 local time. 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 of the year in terms of both mortality and economic damage (CRED, 2024).

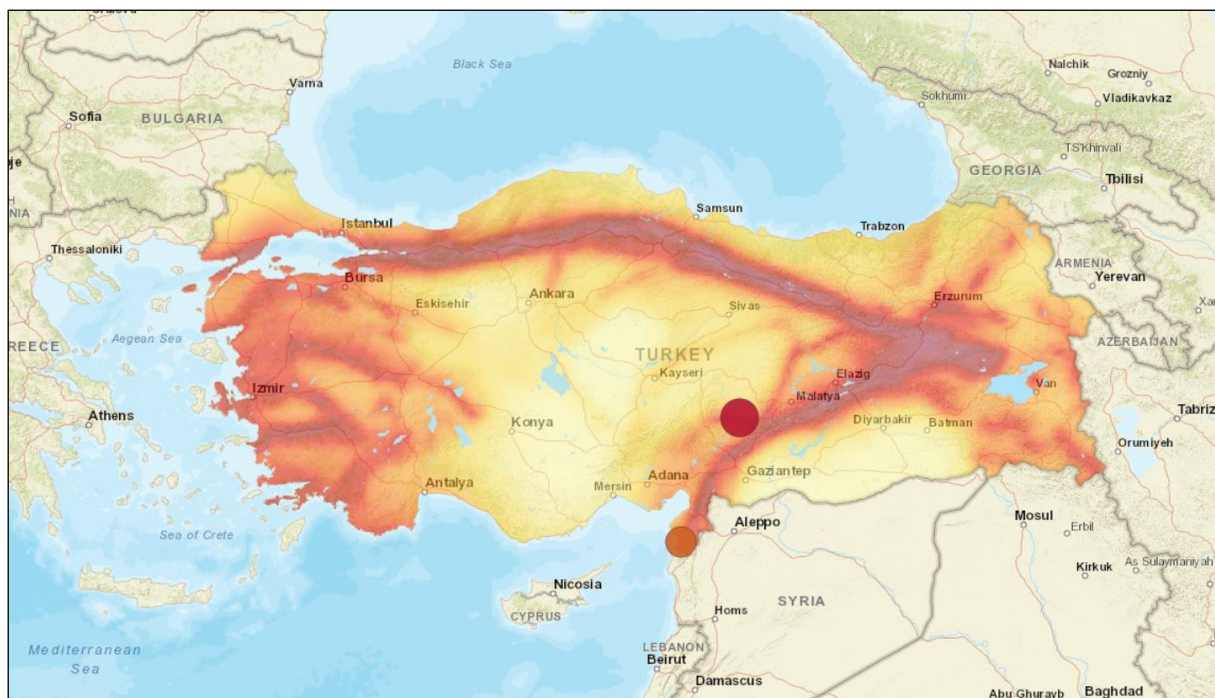



Figure 1: Epicenters in the Earthquake Hazard Map of Türkiye (Source: https://deprem.afad.gov.tr/map)

105   It is observed that earthquakes occur in close proximity to the major fault lines. The quakes were felt strongly in numerous cities, including Kahramanmaraş, Hatay, Adıyaman, Gaziantep, Malatya, Kilis, Diyarbakır, Adana, Osmaniye, Şanlıurfa, and Elazığ, resulting in loss of life and significant damage (AFAD, 2023; USGS, 2023). The devastating earthquakes resulted in the tragic loss of over 50 thousand lives, marking the most destructive sequence of tremors in modern Turkish history (Avcil et al., 2023; Binici et al., 2023; Hussain et al., 2023). Furthermore, it was noted that the initial earthquake inflicted more

110   significant damage in Kahramanmaraş and Hatay, while the subsequent earthquake caused more destruction, particularly in Malatya (AFAD, 2023).

Table 1: The Consequences of the Kahramanmaraş and Hatay Earthquakes

Total loss of life	50.783
Number of injured	107.204
Number of people affected	14.013.196
Number of disabled people affected	2.511.950
Number of provinces affected	11
Total number of buildings	2.332.841
Number of buildings assessed for damage	1.712.182
Number of collapsed buildings	38.901
Demolishing needed urgently	17.491
Heavily damaged	179.786
Moderately damaged	40.228
Light/slightly damaged	431.421
Total economic loss	103,6 billion US$

Source: Created by the author using government data (Government of Türkiye, 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, the submarine landslide is estimated to have caused seafloor deformation following the tragic tremor (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). Based on current estimations, the extensive economic loss surpassed 103 billion dollars and may reach approximately 9 per cent of the national income in 2023 (SBB, 2023).

A State of Emergency was declared for three months in earthquake-affected provinces, starting February 8, 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, dismantling 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 operations, transportation to the earthquake area faced severe problems, particularly 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). Also, according to 2021 data, 1.5 million people residing in 11 affected provinces still earn below the national income average (TURKSTAT, 2021). It became more challenging to deal with the aftermath of an earthquake due to poverty.

The devastating earthquakes have exposed several shortcomings, including the inadequate 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 explicitly repurposing the ground floors of residential buildings for commercial use required designs that

135 could withstand the added stress. However, the floors weakened and sustained more damage without proper structural reinforcements (TMMOB, 2023). Also, some of the main reasons for the heavy destruction were the low material strength, overload, and the need for engineering services (Avcil et al., 2023; Mercimek, 2023; Papazafeiropoulos and Plevris, 2023; Zengin and Aydin, 2023). Plain reinforcement and craft defects have been pinpointed as significant issues that are intolerable regarding ground movement. Such a scenario suggests the employment of unaccredited individuals in building construction,

140 including masters, journeymen, and construction workers (AFAD, 2023).

3 Methodology

3. 1 Study Design

This study focused on the crisis management process after the Kahramanmaraş Earthquakes on February 6, 2023. The post-earthquake crisis management process, including crisis communication, response capacity, and crisis management, was

145 examined. The research was conducted using the qualitative research methodology. This powerful approach enables researchers to understand people's experiences in-depth by examining their 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 Türkiye Disaster and Emergency Management Presidency (AFAD) on its official X (Twitter) account and in a press release during the 25 days following the earthquake, up

150 to March 2, 2023. This study employed purposive sampling, carefully selecting an example that provides the most opportunity for exploration, understanding, and problem-solving to ensure accuracy (Merriam and Tisdell, 2016). Purposive sampling is beneficial for qualitative research as it facilitates a detailed examination 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. The selection criterion was being responsible for disaster management. The criteria for purposive sampling

155 reflect the study's purpose and guide the selection of information-rich cases (Merriam and Tisdell, 2016).

3. 2 Research Questions

This study has three main research questions.
   • How did the Turkish Government respond to the disaster using a crisis management approach?
   • How did disaster management agencies implement crisis communication practices?
160   • How did the Turkish Government manage the capacity required for disaster response?

3. 3 Data Collection and Analysis

Data collection began on February 6, 2023, when the earthquakes took place, and it continued for 25 days, ending on March 2, 2023. AFAD issued its last press release on crisis management on March 2, 2023, after which the data collection was terminated. During the 25 days, the total number of tweets was 1347, and press statements accounted for 3842 words. The

165 data was analyzed using the thematic analysis method, which involves creating themes and categories (Greg Guest; et al., 2014). During the analysis, the MAXQDA20 qualitative analysis program was used to apply Code Cloud and MaxMaps Code Models 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).

170 **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 by Guba and Lincoln, which researchers follow (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

175 (Creswell, 2002; Shultz et al., 2020). This study used expert opinion and inter-coder agreement to ensure the study's reliability.

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

P (observed) = Po = a / (a + b + c) = 0.84

P(chance) = Pc = 1 / Number of codes = 1 / 38 = 0.03

180 Kappa = (Po - Pc) / (1 - Pc) = 0.84

If there is an unequal number of codes per segment or if only one code is to be evaluated:

P (chance) = Pc = Number of codes / (Number of codes + 1)2 = 0.02

Kappa = (Po - Pc) / (1 - Pc) = 0.84

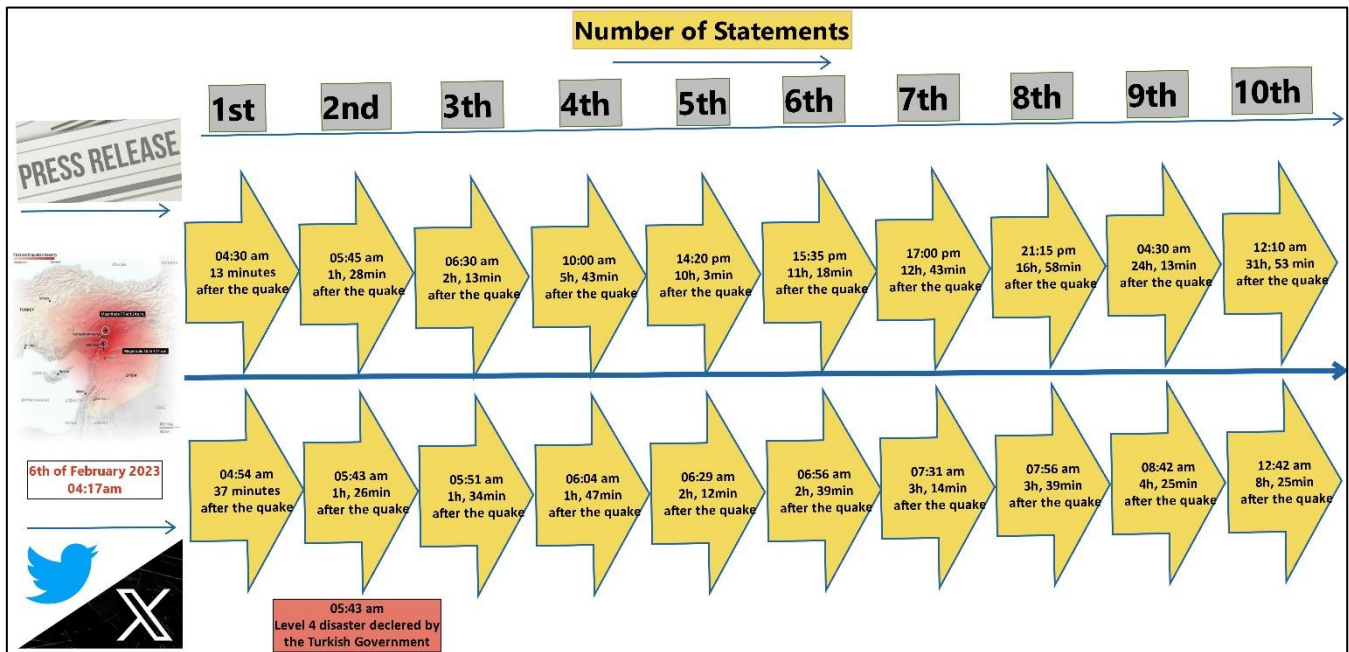
This study achieved a Kappa value of 0.84 in an inter-coder agreement test, which measures the degree of agreement

185 between coders and creates a statistical value that indicates the agreement's value (Houser, 2018). 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 social media accounts and press
190   release offices.

4 Results

The results are presented by evaluating all statements made by official sources during the 25 days 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 in quantity,
195   and the crisis management category regarding response, coordination, recovery, and shelter. Lastly, a word cloud of all the
statements was provided. The initial table highlights the statements issued by AFAD, an official governmental entity for
disaster management, immediately following the earthquake. The first ten pieces of information sharing, including social
media and press releases, were analyzed based on frequency and timing.

200   **Figure 2: Time-Based Distribution of the Initial 10 Statements Made after the Earthquake**
Source: Created by the author using government data (AFAD, 2023; Government of Türkiye, 2023). *(h=hours, min=minutes)

Immediately following the earthquake, AFAD, the official disaster management institution, began issuing statements on its
website and official X (Twitter) account. After the initial ten explanations, a specific order was established for the
subsequent explanations, and the first ten were assessed based on their speed and regularity. According to the data presented
205   in Figure 2, the initial press statement was issued 13 minutes after the earthquake at 04:17. In contrast, it took 37 minutes for

the first social media statement to be released. Notably, the average time between each statement for the first ten press releases was 3 hours. Dissimilarity, the average time between each statement for the first 10 X (twitter) social media statements was 50 minutes. It was officially communicated to the public after 86 minutes that the disaster had reached a level four severity, surpassing the country's capacity to handle it.

Figure 3: Disaster Response Capacity Source: Created by the author using government data
Source: Created by the author using government data (AFAD, 2023; Government of Türkiye, 2023)

Figure 3 shows the response capacity during the first 24 hours and the following days after the earthquakes. In the aftermath of the earthquakes, the response efforts in the disaster area were closely monitored over 25 days 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 hours, the first 72 hours, the first 120 hours, 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 hours, over 24,000 within the first 72 hours, and exceeded 31,000 within the first 120 hours, 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 hours. However, the count stood at 9876 within the first 24 hours. By the end of the operation, it was noted that over 270 thousand 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 hours, a testament to the immediate provision of essential services. This number had increased to 369 by the end of the operation. The count of tents following the disaster remained a topic of prolonged debate.

225 Official reports indicated that 19,772 tents were dispatched to the area within 10 hours post-disaster. Within the first 24 hours, this figure rose to 41,504. Following a 25-day search and rescue operation, the total count of tents reached 360,167. Regarding logistics, 167 aircraft and 38 ships were utilized in the operations.

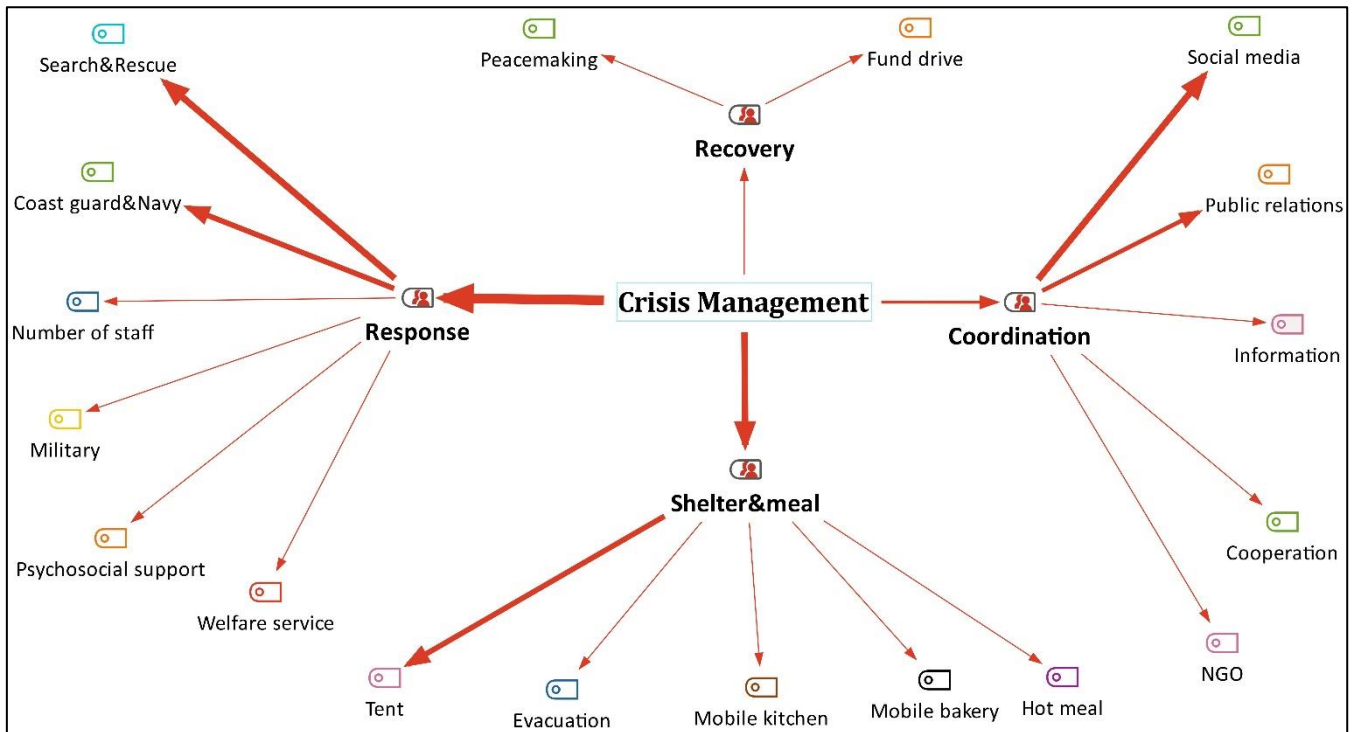



Figure 4: Post-Disaster Crisis Management Processes
230 Source: Created by the author using the MAXQDA2020 analysis program. *The arrows' thickness denotes the codes' intensity.

The analysis in Figure 4 examined all post-earthquake statements related to crisis management. Initially, the focus was on evaluating crisis management in the response phase. However, the data revealed that significant codes were formed for coordination, shelter/meal, and recovery. Consequently, these categories were also incorporated into the crisis management assessment. The most prominent codes related to the response phase were search and rescue, coast guard, and navy, followed

235 by the number 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 codes. Lastly, the most pervasive codes in the recovery category were peacemaking and fund drive.

Figure 5: Total Code Cloud
Source: Created by the author using the MAXQDA2020 analysis program. * The most intense codes are located in the middle.

The data in Figure 5 unequivocally demonstrates the prevailing total codes mentioned in the earthquake's aftermath. Spanning 25 days from February 6, 2023, when the quake struck, to March 3, 2023, a comprehensive analysis of 37 press releases and 1,347 social media statements was undertaken using a rigorous qualitative analysis program. The ensuing analysis unveiled the predominant codes recurrently utilized in the official statements during this period. These encompassed search and rescue, coast guard, military, shelter, tent, evacuation, mobile kitchen, and the number of personnel attending the rescue operations.

5 Discussion

In times of crisis, timely and consistent press releases play a crucial role in effective communication. Following the Kahramanmaraş Earthquake that hit at 04:17 a.m., the first press release was issued just 13 minutes later, with a social media post following 37 minutes later. While 37 minutes may seem like an impressive response time for social media, it falls short compared to the speed of press release. Gurman and Ellenberger proposed that organizations increasingly rely on X (Twitter) to engage with people worldwide. X's rapid and transparent communication channels have also played a critical role in crisis management, enabling organizations to offer timely updates and assist those in distress (Gurman and Ellenberger, 2015). In their study, Murthy et al. stated that rapidly disseminating any emergency or crisis information is fundamental to information

management. Also, the alerts should contain clear instructions for individuals in the affected area to follow during an emergency (Murthy et al., 2019). Timely and rapid dissemination of official social media information is essential following a significant public crisis (Chen et al., 2021). X (Twitter) 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 ten statements released after the earthquake, it was found that a statement was made on average every 3 hours. In contrast, the first ten statements on social media (X-twitter) were made every 50 minutes. The 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. argued that when official channels do not provide information regularly, people may be exposed to rumors that fill the information void. Also, periodically releasing timely and substantial updates during a crisis is crucial for reducing distress (Jones et al., 2017). Lee acknowledges that the foundation of disaster communication is the disclosure of accurate news to the public without delay (Lee, 2008). Linardi argues that rapid information sharing should occur through horizontal and vertical communication mechanisms between citizens during disasters (Linardi, 2016). In addition, Ineffective crisis communication during disasters unequivocally destroys trust between parties (Mackay et al., 2021). Kryvasheyeu et al. emphasized the critical role of sharing information on social media during disasters and emergencies. They highlighted that such sharing enhances situational awareness, facilitates early warning systems, and assists emergency managers in real-time monitoring and assessment of the catastrophe (Kryvasheyeu et al., 2016). Using X (Twitter) 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). Genes et al. analyzed tweets from official governmental accounts in the aftermath of a Superstorm disaster. Their findings highlighted the importance of utilizing social media for official agencies as a vital component of emergency response plans. This enables the rapid dissemination of accurate and current information to the public during emergencies and disasters (Genes et al., 2014).

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 am, 1,898 search and rescue personnel were actively working in the field within the first six hours of the disaster, increasing to 13,740 by the end of 24 hours. 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 the light level 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, seven days a week (INSARAG, 2020). According to reports, over 38,000 buildings were destroyed during the recent earthquake. If one mid-level USAR team is assumed to be present in each building, more than 1.5 million search and rescue personnel would be required. However, by the end of the operation following the earthquake, only around 35,000 personnel had been mobilized. These numbers suggest that finding enough search and rescue

290 personnel is technically impossible. The focus of earthquake preparation should be on building solid structures. Bartolucci et al. assert that Urban Search and Rescue (USAR) deployments are incredibly costly, and their effectiveness is closely tied to the speed at which they become operational; deployments yield limited results in terms of lives saved (Bartolucci et al., 2019). Okita et al. conducted a study on deploying international USAR teams after an explosion. They proposed that international USAR teams should be adaptable and flexible to assist with early recovery efforts after completing the search

295 and rescue phase (Okita et al., 2022). Rom and Kelman highlighted the limited capacity of Search and Rescue Teams to save lives after earthquakes due to the time it takes for them to become operational. They stressed the importance of pre-disaster reduction to minimize disaster-related morbidity and mortality and suggested involving the media in sharing stories of survival or loss during such events. They also emphasized the media's role in holding politicians and policymakers accountable for disaster preparedness and response decisions while addressing corruption issues (Rom and Kelman, 2020).

300 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). Similar to how preventative medicine aims to intervene to avoid rather than treat disease, disaster risk reduction seeks to prevent a hazard from causing harm and disrupting the lives of those affected, ultimately striving to turn potential disasters into non-events (Rom and Kelman, 2020). Improving building codes and their implementation, as seen in successful examples such as Japan, and retrofitting older buildings could significantly

305 decrease the number of deaths and injuries caused by earthquakes, thus reducing the demand for search and rescue operations (Bilham, 2010; Booth, 2018).

During the 25-day crisis management phase following the earthquakes, AFAD's statements focused on diverse areas, including search and rescue operations. However, there was no explicit acknowledgement of any shortcomings or inadequacies in the response to the earthquakes or the preparation stages leading up to them. This lack of acknowledgement

310 has raised concerns about crisis communication. The CDC report emphasizes the importance of transparently disclosing which resources are sufficient and which are lacking in the aftermath of a disaster. This is a crucial aspect of effective crisis communication (CDC, 2023b). Meyer's study highlights a tendency among disaster managers to associate complex processes with the nature of disasters, suggesting that the assumption of inherent complexity and difficulty in disaster response is expected (Meyer et al., 2021). Sisco emphasizes the importance of responsible institutions and organizations accepting their

315 shortcomings and apologizing during the crisis management phase to maintain mutual trust and corporate reputation (Sisco, 2012). 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

320 given the occurrence of the disaster after an earthquake, resulting in the collapse of buildings. 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 and other international

militaries have been mobilized to provide disaster relief after significant natural calamities (Bollettino, 2016). Flarity and his team highlight the significant capacity of military health units to assist overwhelmed civilian health centers during disasters.

325   They also underscore the essential nature of civil and military collaboration in such situations (Flarity et al., 2022). Burke states that military forces significantly contribute to disaster response and humanitarian aid efforts (Burke, 2016). However, there are critiques among certain publications regarding the involvement of military personnel in disaster response efforts. Malešič's research highlights potential conflicts or issues between civilians and soldiers in disaster-stricken areas. Specifically, he identifies problematic areas such as the potentially overbearing presence of soldiers over civilian institutions,

330   the potential negative impact on civilian culture due to military involvement, and the possibility of the chain of command straining civilian institutions (Malešič, 2015).

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 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

335   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.

Coordination emerged as a crucial topic in the crisis management process following the earthquakes. Social media and

340   public relations codes were among this category's most commonly utilized tools (Sarı and Özer, 2024). With the growing prevalence of social media in disaster situations, technological advancements have played a significant role in facilitating communication and coordination throughout all stages of disaster management (Mitcham et al., 2021). Clark and Chongtay's research supports this notion, highlighting the vital role of technological developments in effective disaster response (Clark and Chongtay, 2020). In addition, advancements in information technology, such as social media, allow decision-makers to

345   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's study highlights the significant role of social media in disaster response and crisis management. They emphasize that social media can significantly aid in gathering and fulfilling aid

350   requests. The study also recommends that aid organizations enhance their utilization of social media during such critical times (Yan and Pedraza-Martinez, 2019). Saroj and Pal's research centers on using social media in disaster scenarios and the subsequent management of such crises. They stress the significance of social media as a reliable means of communication, even when traditional methods are disrupted by calamities such as earthquakes. Their analysis underscores the value of social media in crisis management for providing up-to-date information and gathering data from the ground (Saroj and Pal,

355   2020).

This study is centered on managing a crisis following an earthquake and examines the actions taken during this process. The data used was comprised of press releases, without any questions or interactions involved in the statements. Unfortunately, elements such as nonverbal communication and gestures were not able to be analyzed, and this is the limitation of this study.

6 Conclusion

360 This study analyzed the Turkish Government's crisis management and communication strategies in response to the 2023 Kahramanmaraş Earthquakes. Despite the country's immediate mobilization, the earthquake resulted in catastrophic losses, making it the most destructive quake Türkiye has experienced in the past century. The Government's first press statement was released 13 minutes after the earthquake at 4:17 am, followed by a social media statement 37 minutes later. While some may argue that this was late for crisis communication, the declaration of a level 4 disaster only 86 minutes after the
365 earthquake demonstrated that state institutions recognized the severity 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 to prevent loss of life. Consequently, the primary focus should be on disaster prevention and mitigation efforts. Therefore, regarding earthquakes, it is essential to prioritize constructing robust infrastructure before disasters strike. However, the presence of nearly 250,000 volunteers in the disaster area is a testament to the remarkable spirit of solidarity.
370 The focus on the Coast Guard in official statements underscores the necessity of the armed forces in post-earthquake response efforts. Furthermore, the study identified areas for improvement in crisis management related to shelter, particularly in providing tents. Social media played a pivotal role in information management and coordination in the aftermath of the earthquakes. Therefore, future research must delve into information management, disinformation, and social media leadership in post-disaster crisis management.

375 **Data and codes availability.** The data are available to the public, and codes, voice recordings, and written texts can be shared upon request for scientific purposes.

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