

THE INTERNATIONAL SYMPOSIUM OF DISASTER & EMERGENCY – INFORMATION & INTERVENTION (SODEII 2022) PROCEEDING BOOK

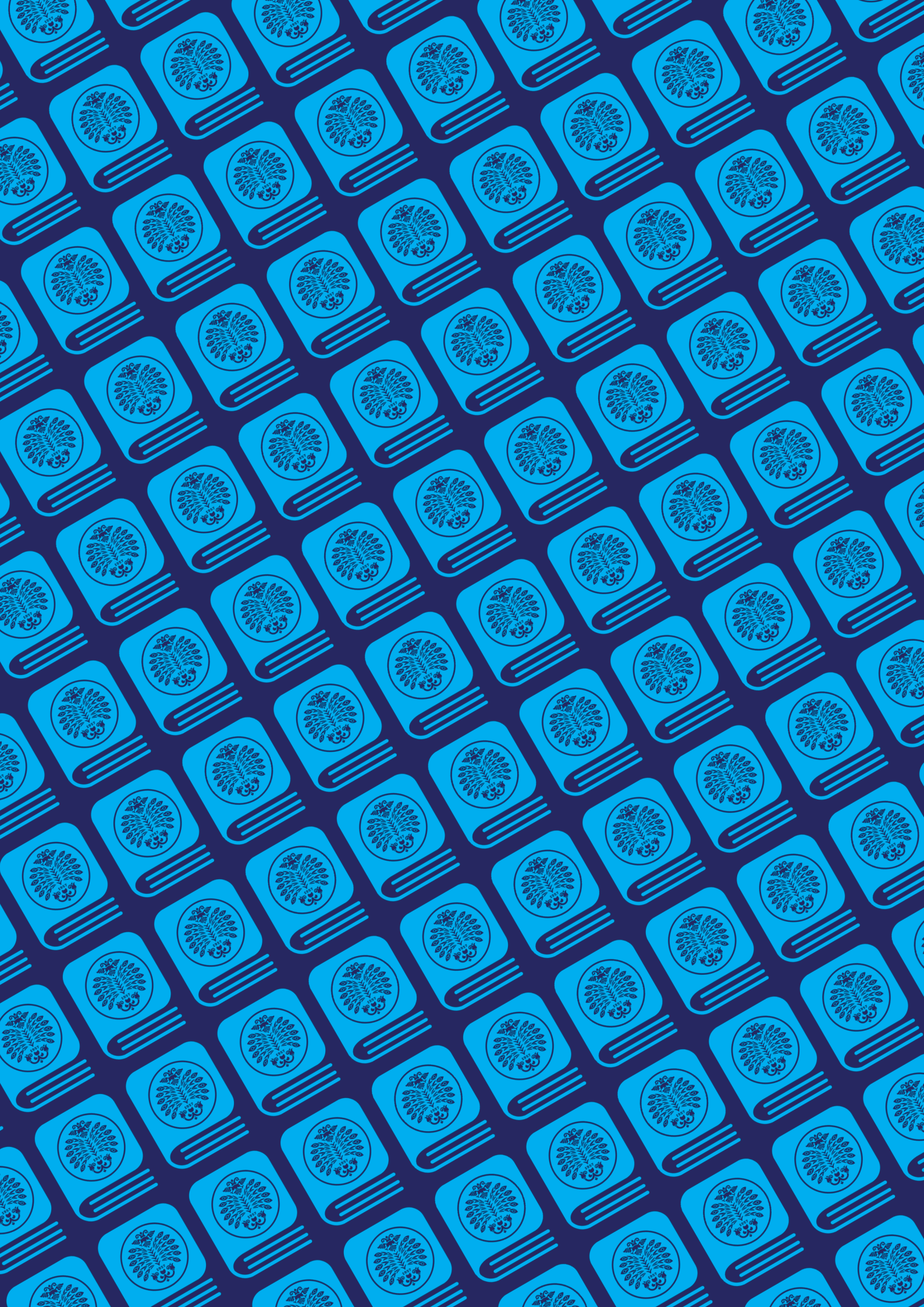
Editors:

Assoc. Prof. Mehmet Sinan BAŞAR

Assoc. Prof. Atif BAYRAMOĞLU



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**Bu yayın Bilimsel Araştırma Projeleri (BAP) Koordinasyon Birimince
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PREFACE

Information is the most important fact of our age, as well as a source of power and capital. It is inevitable for it to exist actively in every aspect of our lives. Especially in large-scale disaster situations, the importance of information is felt more. Because lack of information can lead to increased loss of life and property. More than 18000 of people lost their lives in the 1999 İzmit earthquake. About 6,000 people are missing; Whether they were pulled from the wreckage, whether they were alive or not, and much more is unknown. This teaches that planning should be made about how to manage information while preparing for disasters. It is important to collect information not only about the disaster victims, but also about the disaster itself and everything it affects, to deliver this information to the necessary places in a timely manner, to analyze it carefully and to be better prepared for the next disasters.

Information about the disaster and the victims should not be lost, should be brought together and associated with each other at the time of the event or later. First of all, it is necessary to determine what information will be collected and must stored. Then, how the information will be collected and how it will be brought together should be determined, and issues such as how the information will be associated with each other and which analyzes can be made should be considered. These issues will also be effective in planning the necessary division of labor and organization during the intervention.

When we look at the whole event, it can easily be seen that we are faced with an interdisciplinary study subject for which a single science or field of study will not be sufficient. The first ones that come to mind from these areas are; Disaster Management, Emergency Medicine, Management Information Systems, Computer Engineering and Statistics.

The International Symposium of Information Management and Response in Disaster and Emergencies was organized within Atatürk University Open Education Faculty and with the support of Atatürk University Rectorate. Academicians and expert speakers from six different countries, Turkey, UK, USA, Netherland , Switzerland and Bulgaria participated with their epeech and presentations to the symposiom. The intemational symposium lated for 5 sessions via 2 days. There were 25 oral presentations at the symposium. A total of 51 researchers attended the symposium, In this booklet, we aimed to share the symposium speeches and presentations with you.

We wish you healthy, desasters free, good days.

*International Information Management and Response in Disaster and
Emergencies Symposium Committee*



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FULL TEXTS OF SPEECH



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**LINGUISTICS AND PSYCHOLINGUISTICS FOR CRISIS MANAGEMENT AND
CRISIS COMPUTING - 3 RESEARCH PROJECTS HIGHLIGHTS**

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ABSTRACT

This article represents the contents of an invited talk at the 1st edition of “The International Symposium of Disaster & Emergency – Information & Intervention: Information Management and Response in Disaster and Emergencies” (SODEII 2022). The article presents the applications of Linguistics and Psycholinguistics to the fields of Crisis Management and Crisis Computing. The applications of Linguistics and Psycholinguistics are discussed because they are the scientific areas, which focus on the way in which humans communicate and understand each other. In this way, the methods from these two areas are used to contribute to two important aspects of Crisis Management - specifically Information Management and Communication Strategies. They do this not in terms of the selection or the contents of the information to be delivered to the public, but rather regarding how to best transmit the desired message and meaning. The paper illustrates their application to the fields of Crisis Management and Crisis Computing, by providing a summary of three completed research projects, which use a mixture of methods from all these fields. All three projects consist in highly interdisciplinary scientific research, practically applied to reality. Two of the three projects concern evaluating and improving the comprehensibility (understandability) of texts, delivered by official authorities to the general public in crisis or disaster situations. The third research project presents a different application - a linguistic resource, aiming to assist with the recognition and extraction of relevant disaster social media messages for Crisis Management and Crisis Computing purposes, which is achieved by applying linguistic and Natural Language Processing methods.

Keywords: Linguistics, Psycholinguistics, Crisis Management, Crisis Computing, Natural Language Processing

Introduction and Aim

This article addresses the use of methods from the Linguistics and Psycholinguistics fields for more efficient communication between authorities and the general public and for relevant crisis and disaster information discovery in the ocean of social media posts.

Linguistics is defined as the scientific study of language, both written and oral, addressing all its existing rules of forming words and structures, including phonetics, word morphology, grammatical structures, meaning and semantics, and the historical development of language, for

all languages in the world [1, 2, 3].

Psycholinguistics or the Psychology of Language is considered to be both a subfield of Linguistics and an interdisciplinary area between Linguistics and Psychology. It studies the way in which people learn, produce, and understand language [1].

It is known that the primary function of language is communication [1] and it is a form of joint action, where people collaborate to achieve a common aim [1]. Efficient communication is crucial in crisis and disaster situations, and thus it is important to use knowledge and methods from the Linguistic and Psycholinguistic fields in the Crisis and Disaster management domains as both these areas study the way in which humans communicate and understand each other. Linguistic and psycholinguistic knowledge is also important for Crisis Computing (also known as ‘Disaster Informatics’) because it is a source of very useful and widely-used language-centered features for automatic tasks (e.g. for Machine Learning).

There are various applications of Linguistics and Psycholinguistics to both the Crisis Management and Crisis Computing fields. Some examples include: suicide prevention (by manually or automatically recognizing early language signs of potential suicide); both manual and automatic monitoring of citizens communications in social media during crisis events to collect information for situational awareness [4, 5]; analysing the appropriateness of communications of authorities to the general public [6]; defining general and specialized crisis glossaries [7]; studying language behaviour and style as a measure of urgency in crisis messages in social media [8]; and researching how second-language speakers understand emergency communications [9].

This article presents the results achieved during three applied and interdisciplinary research projects. Due to space limitations, the article shows only their highlights. The first two projects (Section 2 and Section 3) address the evaluation and improvement of understandability of two different types of written texts, communicated by various types of authorities to the general public during crisis situations. Understandability (also called comprehensibility or readability) is addressed from the point of view of Psycholinguistics - specifically, which types of words and syntactic structures are harder or easier to understand.

The third project (Section 4) exemplifies the use of Linguistics in Crisis Computing, by presenting the methods and results of collecting a large number of relevant keywords (linguistic expressions), which allow to recognize and extract (both manually and automatically) social media posts, highly relevant to different aspects of disasters. Extracting such posts can be used further to build disaster-specific situational awareness from crisis tweets.

Project 1: Understandability of Emergency Instructions

The first project addresses the comprehensibility of emergency instructions and proposes detailed guidelines on how to write such instructions in a clear and understandable way. The research has been done as part of the MESSAGE project¹, a project, funded under the “Prevention, Preparedness and Consequence Management of Terrorism and other Security-related Risks” Programme of the European Commission - Directorate-General Justice, Freedom and Security.

¹ <http://message-project.univ-fcomte.fr/>. Last accessed on February 11, 2022.

The project consisted in linguistic and psycholinguistic research of the understandability and on methods to write clear to understand emergency instructions and messages from the authorities to the general public in several European languages - French, English, Spanish, Polish, and Bulgarian. The current article describes the research done for English and its evaluation results.

Materials and Methods

This project applies methods from Psycholinguistics, and specifically the knowledge that natural language can often be complex and contain ambiguities [1]. Complexity and ambiguity can appear at different levels - including as words or syntactic structures and syntactic agreement. While different languages can be characterised with different language-specific complexity and ambiguity phenomena, there are some general phenomena, applicable to several languages (for example the long and complex sentences and words with several frequent meanings are comprehensibility issues in several European languages). Another problem is that while some readers should understand even more complex and ambiguous texts, there are readers, who may have lower cognitive skills due to a specific temporal or permanent cognitive condition, lower literacy, or simply be foreigners, who do not know the current country environment and the commonly accepted names.

The project addresses these issues by using a solution called “controlled language”. A controlled language is an artificially constructed subset of the natural language, which has been limited in terms of the allowed words, their allowed meanings, and the permitted to be used syntactic structures, in order to avoid or reduce ambiguity and complexity [10]. Controlled languages are widely used in technical manuals, while those of them which address human comprehension are based on psycholinguistic rules, such as:

- Write short sentences.
- Avoid negation.
- Use simple words.
- Write instructions in a logical order.

The research was done using a variety of written emergency instructions in American and British English, which have been retrieved from the Web (in 2010-2011) from official sources (including the United States Federal Emergency Management Agency (FEMA), the Centers for Disease Control and Prevention (CDC), and the British Red Cross) and in consultation with the Resilience Unit of the UK’s Sandwell Council. The project focussed on emergency instructions for the general public (in total 150 000 words), which were a subset of a larger collection (over 2 700 000 words) of crisis management instructions and alerts (mostly collected from the web), named the Crisis Management Corpus (CMC) [11].

The project produced the Controlled Language for Crisis Management (CLCM) [11], defined in 40 pages guidelines for writing clear emergency instructions in English, with examples, logical and syntactic rules, and a prototype domain dictionary.

Figure 1 shows two CLCM rules. As it can be seen, the rules have a reference number (e.g., “In_L_06”), where “In” stands for “instructions”, “L” for “lexical rule”, and “S” for “syntactic rule”. The rules themselves are also written in accordance with what is allowed or suggested as

best practices in the CLCM guidelines. In Rule In_S_06 it is suggested to use “active voice”, as “passive voice” is considered to be hard to understand from the psycholinguistic point of view.

In_L_06: If possible:

Avoid acronyms and abbreviations.

If not:

Use only the acronyms and abbreviations pre-defined in the dictionary.

Contact the NPFS.	Contact the NPFS (National Pandemic Flu Service).
-------------------	--

Explanation: Abbreviations can be ambiguous or unknown to non-native speakers.

In_S_06: Avoid passive voice.

Make sure 999 is called.	Call 999.
--------------------------	-----------

Figure 1: Two CLCM rules.

Figure 2 shows instructions, written according to the CLCM rules (A), and their original version (B).

<p>A:</p> <p>How to protect yourself after a volcanic eruption:</p> <p>Turn off:</p> <ul style="list-style-type: none"> • heating, • air conditioning units, • fans. <p>Close:</p> <ul style="list-style-type: none"> • windows, • doors, • fireplace, • woodstove dampers. <p>• Explanation: This helps keep ash and gases from getting into your house. Exposure to ash can harm your health, particularly the respiratory (breathing) tract.</p>	<p>B:</p> <p>You can do many things to protect yourself and your family after a volcanic eruption: Turn off all heating and air conditioning units and fans, and close windows, doors, and fireplace and woodstove dampers to help keep ash and gases from getting into your house. Exposure to ash can harm your health, particularly the respiratory (breathing) tract.</p>
--	--

Figure 2: Instruction, written according to CLCM.

As it can be seen, the rewritten version (A) provides clear division into visible sections, with instructions ordered in a logical way, and separates the actual instructions from the Explanation, which is not so urgent to read.

Findings and Discussion

Several aspects of instructions, written according to the CLCM rules have been evaluated, by running the following experiments:

100 participants with different backgrounds and a large variety of Indo-European and non-Indo-European native languages have been asked to answer questions about the original and

re-written texts under limited time.

Professional translators have been asked to: manually translate both original and rewritten texts from English into several European languages (Russian, Bulgarian, Slovenian, Spanish, Greek, Dutch, Maltese). manually correct (so-called “post-edit”) the original and rewritten texts, automatically translated by Google Translate from English into the same languages.

The experiments were designed in such a way that the participants and the translators have never seen the same text in both its original and re-written versions.

The results show [11] that the participants gave faster and more correct answers to most of the instructions, which were written according to the CLCM guidelines. An interesting finding (in Figure 3) was discovered when comparing the behaviour of male versus female participants, which were roughly 50-50%. While male participants (with different native languages and backgrounds) gave correct answers to CLCM-rewritten instructions faster, this did not appear to be true for the female participants. More research is necessary to understand the reason.

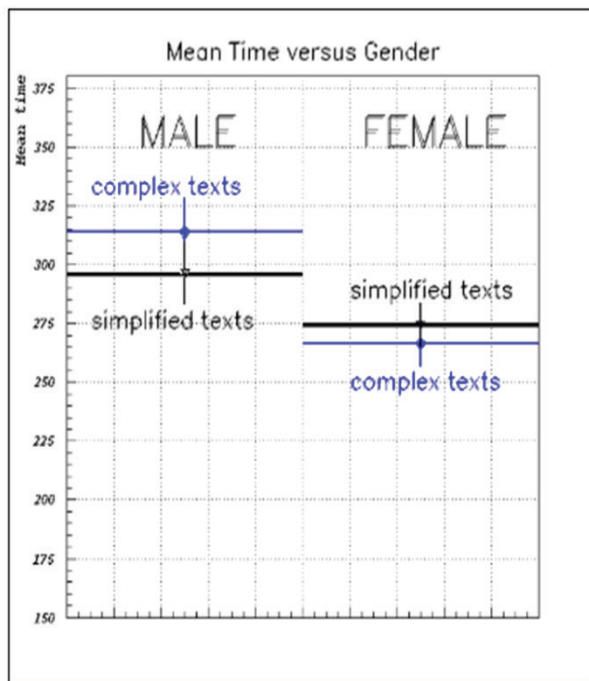


Figure 5.9: Time to correctly answer questions for *Female* and *Male*.

Figure 3: Time to correctly answer questions for Male and Female participants. “Complex texts” are the original versions, and “simplified texts” - are the CLCM versions.

The manual translation of CLCM instructions was faster for some languages (Bulgarian, Slovenian, Spanish, Maltese), and the machine translation errors were easier and faster to manually correct for all language pairs.

Project 2: Understandability of Social Media Posts

The second project [15] analyses and evaluates the understandability of English-language social media posts, published for the general public by governments, media, and non-governmental

organisations (NGOs) during different types of disasters. The research has been done by part of the Crisis Computing team at the Qatar Computing Research Institute (QCRI). The project also provides simple suggestions for the authorities on how to write clear to understand social media posts for the general public.

Materials and Methods

This project also uses the psycholinguistic notions of which words, expressions, and syntactic structures are easier to understand, and which not. However, the type of texts is different.

This study uses 500 randomly selected informative tweets from the CrisisLexT26 [12] collection. The CrisisLexT26 collection contains Twitter messages from 26 different disasters, which occurred worldwide in 2012 and 2013. Each tweet in the collection is annotated for whether it contains useful information that helps to understand the situation (“informative” or “non-informative”), for type of content (“affected individuals”, “infrastructure and utilities”, “caution and advice”, etc.), and for source (e.g., eyewitnesses and NGOs). The tweets used in this study were posted by NGOs, media, and governments during different types of disasters, in different countries (e.g., the floods in Alberta in 2013, bushfires in Australia in 2013, the Boston bombings in 2013, the Singapore haze in 2013, the typhoon Yolanda in the Philippines). Each tweet was further shown to 5 CrowdFlower² workers, who were asked to label it as “Very clear”, “Needs slight improvement”, and “Very unclear”, and in the case in which it was labeled with the last two categories - to provide suggestions about how to rewrite it, in order to make it more understandable.

Findings and Discussion

The analysis has shown that the 500 crisis tweets posted by NGOs, media, and governments had several comprehensibility issues, some of which were generally psycholinguistic, and some were Twitter-specific (Table 1).

Psycholinguistic	Twitter-specific
Use of acronyms and abbreviations	Excessive use of hashtags
Use of unfamiliar words	Text choppiness
Use of long sentences	Presence of misspellings
Use of impersonal style	
Ex.: “Police calling for immediate evacuation!” vs. “Evacuate immediately!”	

Table 1: Comprehensibility issues in the crisis tweets.

These findings confirmed what was observed by others - that often the language used by authorities does not match the knowledge of the general public [6]. The text choppiness and misspellings are typical for the way common users often write their social media posts, which are

² CrowdFlower was the previous name of a large-scale data annotation platform for hiring contractors from over 100 countries. It is currently owned by Appen (<https://appen.com/figure-eight-is-now-appen/> - last accessed on 14 February 2022).

known to be often ungrammatical and not so fluent. However, this was a surprise for posts, written by official channels.

Table 2 shows other clarity (understandability) results, mostly related to Twitter-specific elements. These results are significant at 0.01 (***) and 0.05 (**) p-values.

Linguistic characteristics	Very Clear	Needs slight improvement and Very unclear
Average post length (in characters)***	108.6	93.1
Average number of acronyms***	0.3	0.7
Fraction with acronyms***	25.5%	64.8%
Fraction with mentions**	23.5%	38.9%
Fraction with URLs***	56.3%	22.2%
Fraction with hashtags (#)***	68.8%	87.0%
Fraction with hashtags at the beginning***	6.1%	37.0%

Table 2: Numerical amounts of specific characteristics.

Table 2 shows that among the most serious issues, which characterise the two categories of Unclear tweets, are the presence of acronyms in the tweet and hashtags, placed at the beginning of the tweet.

Table 3 shows the number of tweets in each clarity level (“Very clear”, “Needs slight improvement”, and “Very unclear”), and Figure 4 provides examples of “Very clear” and “Very unclear” tweets.

Clarity of tweets	Percentage
Very Clear	82.1%
Needs slight Improvement	12.0%
Very Unclear	6.0%

Table 3: Percentage of tweets per category of clarity.

Event, year	Source	CrisisLex26 category	Tweet	Clarity
Colorado floods in the USA, 2013	Gover.	Infrastr. and utilities	Colorado flooding doesn't stop Postal Service http://t.co/na58Mmy3an	Very Clear
Typhoon Pablo in the Philippines, 2012	Gover.	Caution and advice	NDRRMC Update SitRep No. 26 re Effects of Typhoon PABLO (BOPHA) as of 13 December 2012. 10:00AM. http://t.co/G8MHAWrq	Very Unclear

Figure 4: Examples of Very clear and Very Unclear tweets.

As a last result, this research produced a small set of suggestions on how to write clear tweets, which can be used to train experts, responsible for writing such messages. The suggestions address three aspects of the tweets’ comprehensibility: message length, vocabulary, and use of

Twitter-specific elements, and are listed in Table 4.

Tweets aspect	Suggestions
Message length	<p>Include a maximum of 1 or 2 main points per tweet.</p> <p>Write brief, concise sentences.</p> <p>Remove superfluous words.</p> <p>Write fully-formed sentences; avoid writing incomplete thoughts, or incomplete messages.</p>
Vocabulary	<p>Use only simple and familiar words.</p> <p>Use abbreviations and acronyms with care, i.e. only if they are more understandable to the public than their expanded form.</p>
Twitter-specific elements	<p>Write a maximum of 2 hashtags.</p> <p>Place all hashtags at the end of the tweet;</p> <p>Avoid mentions (e.g., “@user”).</p>

Table 4: Writing suggestions for clear tweets.

The suggestions in Table 4 can be applied to various languages.

Project 3: Large keywords collection for extracting relevant disaster tweets

The third and final project [16] which is presented in this article, concerns a different application - a large comprehensive collection of over 7200 English keywords, reflecting the actual language used in Twitter (in 2015). The collection of keywords (called “terms”) can be used to narrow down the manual and automatic search for relevant social media posts and to improve extraction of messages of interest to different disaster management’s information needs.

The keywords are divided into categories (rather than into different types of disaster), similar to the categories used in Project 2 - i.e., in terms of what information contents the required social media messages should have (provide information about the weather, disaster victims, shortage of goods and supplies, etc.). While it is very well known that every new disaster is different from the previous ones, the keywords can assist with the search for information present in different types of disasters.

The collection of terms is called “EMTerms 1.0: A terminological resource for crisis tweets” and it is publicly available for download³.

Materials and Methods

Differently from the previous two projects, EMTerms 1.0 has been collected by applying only linguistic and Natural Language Processing (machine learning) methods. No Psycholinguistics has been used.

The terms were collected from the tweets from a large collection of 35 disaster events, including all the 26 events in CrisisLexT26 [12] (a subset of which were used in Project 2), however with no restriction on the type of source.

³ <https://crisislex.org/crisis-lexicon.html>. EMTerms 1.0 (paper and resource). Last accessed on 11 February 2022.

The methods for collecting the terms included several manual and automatic steps. The steps reflected the intuition that the terms used in Twitter by the general public would differ from the specialised disaster glossaries, and thus a look at the Twitter contents discussing real disasters can point to the actual terms used when a disaster occurs.

The first step was to use a small seed set of keywords, manually collected by a crisis manager [14] from tweets discussing 4 events. These keywords were manually labeled by type of content category. After that, a machine learning algorithm (Conditional Random Fields, CRF) was run on all the tweets from the 35 different disasters to collect terms, similar to those in the seed set. The results of this process were a list of terms, each marked with a content category, and accompanied by an example tweet, illustrating the use of the concrete term in a real context.

Two rounds of manual review and filtering of the collected terms, the categories assigned to them, and the associated example tweets followed, one done by a linguist and one by 3 CrowdFlower workers for each term.

The categories used in this project were a modified and expanded version of the categories, used in CrisisLexT26, by making them much more detailed. The categories were coming from 3 different sources: 1) 11 categories from the AIDR classifiers [13], based on the CrisisLex26T categories; 8 categories from the United Nations Humanitarian Cluster System; and 4 new categories, proposed by the authors. The complete list of categories can be found in the related publication [16].

Findings and Discussion

The collected resource has been presented at the International Conference on Information Systems for Crisis Response and Management (ISCRAM'15) and was encountered with active interest. The resource can be used to simplify manual and to focus automatic extraction of social media posts, relevant to specific disaster management categories. The terms can be used manually in the Twitter search field, or by using specialised platforms, which allow entering a list of keywords and then automatically extracting a large set of tweets, containing these keywords (such as the Artificial Intelligence for Disaster Response (AIDR⁴)), or as features for machine learning algorithms [17].

4 <http://aidr.qcri.org/>. Last accessed on February 14, 2022.

Figure 5 shows examples of terms with their associated category and an example tweet.

Term	Category	Example tweet
{Number} flee wildfire	Animal management. Pets and animals, living, missing, displaced, or injured/dead.	32,000 flee wildfire in Colorado. http://t.co/B9kWeVay
extreme rainfall	Weather conditions	Flooding from extreme rainfall is a hazard for ON too. Emergency in #Alberta should be a call to get a 72 hour kit. Better to be prepared.
{Number} critical	Injured people	#LAXShooting @CNN reporting 3 victims at Ronald Reagan UCLA Medical Center, 1 critical
army deployed	Response agencies present at the crisis location	#Pakistan Army deployed for #earthquake rescue operations
{Number} homes destroyed	Need of shelters, including location and conditions of shelters and camps	So sad! 43,000 acres, 5% contained, 500 firefighters... 100 homes destroyed, 1 dead. #wildfire #HighParkFire http://t.co/fpyUydUg
missing	Missing, found, or trapped people	RT @nytimes: Floods Kill 23 in Northern India; Dozens Missing http://t.co/E7DuR61QJY

Figure 5: EMTerms 1.0 examples.

As it can be seen, these terms can be used to collect information about specific aspects of a disaster, such as the disaster victims or the number of affected people. Some of the terms contain a placeholder for “number”, which should be removed if a manual search in the Twitter Search field is performed.

More examples of terms, their category, and illustrative examples of real tweets can be found in the actual terminological resource⁵.

Conclusion

This article has presented the contents of an invited talk at The International Symposium of Disaster & Emergency – Information & Intervention: Information Management and Response in Disaster and Emergencies” (SODEII 2022⁶), by showing the applications of Linguistics and Psycholinguistics to three applied research projects. Two of the projects addressed the understandability of crisis and disaster texts, published by authorities for the general public, while the third one presented a large collection of keywords, which can be used to manually or automatically retrieve social media posts, relevant to specific content categories and information needs. The purpose was to illustrate the importance of Linguistics and Psycholinguistics for the Crisis Management and Crisis Computing domains and to inspire the readers to use the results and resources from these three projects or to develop similar ones for their languages and use cases.

⁵ <https://crisislex.org/emterms/EMTerms-v1.0.zip> Last accessed on February 14, 2022.

⁶ <https://sodeii2022.atauni.edu.tr/>. Last accessed on February 13, 2022.

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**EFFECTS OF SOCIAL MEDIA MANAGEMENT ON NATURAL AND HUMAN RE-
LATED DISASTERS: COVID-19 PANDEMIC PERIOD T.R. MINISTRY OF HEALTH
TWITTER SHARES**

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Abstract

The aim of this study is to analyze the social media supported crisis management approach, which was put forward by the Ministry of Health in order to control the rush environment caused by the COVID-19 pandemic, which emerged in China in December 2019 and later seen in our country in March 2020, with data mining method. Public organizations and managers have to be prepared for the unexpected effects of unexpected causes that may arise during and after natural and human related disasters. It is vital for public organizations and administrators to ensure calmness and maintain the continuity of calm in cases of panic that arise during the crisis. The management of widespread social media communication channels is also a part of the crisis management process. In this context, the Ministry of Health of the Republic of Turkey supported the crisis management process through social media channels by sharing the policies to be implemented in line with the principles of openness and transparency, within the scope of the precautionary strategies adopted in the crisis management process. The tweets shared by the Ministry of Health within the scope of the process management approach in crisis management were shot with the object-oriented programming language Python. The obtained data were analyzed by data mining method within the scope of preventive, corrective and remedial activities in crisis management. It is assumed that, in the light of the findings to be obtained as a result of the study, the Social media management experience and struggle of the Ministry of Health can be a model for determining the social media supported crisis management processes to be applied in the face of possible similar risks that may be encountered in the future. In addition, in the context of the aforementioned findings, various suggestions were presented to public institutions and organizations in the face of possible future crises.

Keywords: Data mining, Content analysis, Social media management

Introduction

The subject of this study is the information pollution that emerged in the disaster process through social media channels, which are one of the most strong communication resources of today, and the challenges that public organizations face in controlling the resulting rush atmosphere.

Public organizations are primarily responsible within the framework of the emergency response plan in the face of adverse situations that may arise before and after natural and man-induced disasters (Turkey Disaster Response Plan, 2014). Public organizations carry out prevention/damage reduction and preparedness activities before disasters occur, response activities during disasters, and recovery activities during and after disasters (“Natural Disasters”, 2022). While the emergency response plan is implemented during the disaster process, various negative effects that impact the process can emerge. One of these effects observed in the process is the inability to verify a large amount of information coming from various sources, and the consequent information pollution.

The COVID-19 outbreak, which was first spotted in Wuhan, China in December 2019 (Balkhair, 2020) and quickly spread over the world, was described as a biological calamity (“Doğal Afetler,” 2022). The epidemic process has many negative consequences, one of which is the resulting information pollution. Information pollution is generally related to the process management, the number of cases and patients, and social order restrictions. In this regard, the Ministry of Health of the Republic of Turkey made sharings from its Twitter account to prevent information pollution in the COVID-19 epidemic process and activate process management. However, it was observed that the sharings were made through the account of Health Minister Fahrettin Koca. Therefore, this research investigated the analysis results of the shares made via the Twitter account of Minister of Health Fahrettin Koca named “@drfahrettinkoca”, through the data mining method, how much they intervene in the process management and information pollution, and which posts are related to disaster response processes.

Materials and Methods

Research Question

The study examined the posts made by the Ministry of Health regarding disaster management during the COVID-19 process. Since the Ministry shared its posts through the Twitter account of Minister Fahrettin Koca, the research questions were shaped in this context.

- How often did the Ministry of Health provide information through the account of Minister Fahrettin Koca?
- Which topics and terms covering prevention/damage reduction and preparedness, response, and recovery activities within the framework of disaster response plan stages have been highlighted by the Ministry of Health via the account of Minister Fahrettin Koca, and how often?
- What kind of posts does the Ministry of Health make, through the account of the Minister Fahrettin Koca, to prevent information pollution in the mass media?
- Is it possible to draw a framework to create a stakeholder to traditional disaster management within the framework of disaster management of the posts made by the Ministry of Health via the account of Minister Fahrettin Koca?

Population and Sample

The universe of the research proposal is the posts made by the Ministry of Health via the Twitter account of the Minister of Health Fahrettin Koca within the scope of the COVID-19 epidemic process. Since the study was carried out within the framework of limitations and covered the management processes of human-induced disasters through social media, the research sample included the merely COVID-19 related Twitter posts of Minister Koca between January 13, 2020 (“Covid19,” 2022; Lim, 2021) when the COVID-19 pandemic was defined for the first time, and December 1, 2021.

Method

Descriptive content analysis and data mining techniques from qualitative research methods were used in this research. (Elo and Kyngä, 2007; Mining, 2011). The data of the sample created within the framework of limitations were obtained with the object-oriented programming language Python. In the obtained data, the terms (f=85) taken from the Ministry of Health Publications Covid-19 dictionary (“COVID-19 Bilgilendirme Platformu,” 2022) were divided into sub-concepts by taking expert opinion (n=3). In this regard, in-scope sub-concepts are determined as “vaccine, Covid-19, filiation, patient, isolation, closure, controlled social life, mask, distance, mutation, staff, epidemic, social isolation, social distance, cleaning, test, case, death, data pollution, virus” (f=20). Also, out-of-scope sub-concepts are determined as “personnel, other disasters, administrative messages, political messages, congratulations, condolences, commemoration, other” (f=7). Sub-concepts were included in prevention/damage reduction and preparedness, response, and recovery stages within the framework of disaster response process stages (f=3).

Findings

Within the scope of the research, f=5120 tweets posted by the Ministry of Health through the Twitter account of Minister Fahrettin Koca were examined. Concept scanning analyzes were carried out on a total of f=3065 tweets shared in the date range studied within research limitations. Relevant shares consist of text, image, graphic, and video shares. Also, each post was subjected to text analysis. The analyzes were conducted within the framework of the Covid-19 Dictionary, which was created during the outbreak and compiled from the publications presented by the Ministry on the Covid-19 Information Platform. f=85 terms in the dictionary were associated with the terms to be precoded in the shares (in-scope concepts; f=20, out-of-scope concepts; f=7) by taking expert opinions (n=3). The data whose pre-coding process was completed were classified as shown in Table 1 by the degree of impact according to the stages of the disaster response plan. Although the concepts of “data pollution” and “personnel” do not have an equivalent in the dictionary, they were included in the pre-coding process because they are the field examined within the scope of the study in disaster process management. The term eradication was excluded because the epidemic was not over yet.

Table 1- Coded Concepts

Ministry of Health Covid-19 Dictionary	In-scope linked terms	Disaster Response Process Stages
Home isolation	Isolation	1-Prevention/Harm reduction
Isolation	Isolation	1-Prevention/Harm reduction
Quarantine	Isolation	1-Prevention/Harm reduction
Self-quarantine	Social Isolation	1-Prevention/Harm reduction
Sanitation	Isolation	1-Prevention/Harm reduction
Social intervention	Closing	1-Prevention/Harm reduction
Controlled social life	Controlled social life	1-Prevention/Harm reduction
Social Distance	Social Distance	1-Prevention/Harm reduction
Data pollution	Data pollution	1-Prevention/Harm reduction
Extubate	Patient	2-Intervention
Infection	Patient	2-Intervention
Intubation	Patient	2-Intervention
Intubate	Patient	2-Intervention
Incubation time	Patient	2-Intervention
Pneumonia	Patient	2-Intervention
Sepsis	Patient	2-Intervention
Ventilation	Patient	2-Intervention
Ventilator	Patient	2-Intervention
Virulence	Patient	2-Intervention
Fever	Patient	2-Intervention
Symptom	Patient	2-Intervention
Infectious disease	Covid-19	2-Intervention
CoV / Coronavirus /	Covid-19	2-Intervention
COVID-19 /	Covid-19	2-Intervention
Coronavirus	Covid-19	2-Intervention
COVID-19 /	Covid-19	2-Intervention
Reservoir	Covid-19	2-Intervention

Contact person	Covid-19	2-Intervention	
Field survey	field survey	2-Intervention	
Mutation	Mutation	2-Intervention	
Attack speed	Epidemic	2-Intervention	
Infection	Epidemic	2-Intervention	
Droplet transmission	Epidemic	2-Intervention	
Indirect contamination	Epidemic	2-Intervention	
Endemic	Epidemic	2-Intervention	
Epidemiology	Epidemic	2-Intervention	
Incidence	Epidemic	2-Intervention	
Contaminated	Epidemic	2-Intervention	
Clustering	Epidemic	2-Intervention	
Pandemic	Epidemic	2-Intervention	
Pandemic hospital	Epidemic	2-Intervention	
Pathogenicity	Epidemic	2-Intervention	
Peak / Summit /	Epidemic	2-Intervention	
Prevalence	Epidemic	2-Intervention	
Prophylaxis	Epidemic	2-Intervention	
R0 Value	Epidemic	2-Intervention	
Rt value	Epidemic	2-Intervention	
Risk factor	Epidemic	2-Intervention	
Epidemic	Epidemic	2-Intervention	
Outbreak review	Epidemic	2-Intervention	
Resource	Virus	2-Intervention	
Konak	Virus	2-Intervention	
Virus	Virus	2-Intervention	
Zoonosis	Virus	2-Intervention	
Sensitive person	Mask	2-Intervention	
Elimination	Distance	2-Intervention	
Physical distance / Social Distance	Distance	2-Intervention	
Antisepsis	Cleaning	2-Intervention	
Transmission routes	Cleaning	2-Intervention	
Hand disinfection	Cleaning	2-Intervention	
Hand cleaning	Cleaning	2-Intervention	
Hand washing technique	Cleaning	2-Intervention	
Regular soap	Cleaning	2-Intervention	
Computed tomography (BT)	Test	2-Intervention	
PCR	Test	2-Intervention	
Asymptomatic person	Case	2-Intervention	
Notification	Case	2-Intervention	

Infected person	Case	2-Intervention	
Health	Case	2-Intervention	
Sporadic case	Case	2-Intervention	
Super contagious	Case	2-Intervention	
Case study form	Case	2-Intervention	
Pprimary case	Case	2-Intervention	
Morbidity	Death	2-Intervention	
Mortality	Death	2-Intervention	
Case fatality rate	Death	2-Intervention	
Antigen	Vaccine	3-Rehabilitation	
Antibody	Vaccine	3-Rehabilitation	
Vaccine	Vaccine	3-Rehabilitation	
Immune	Vaccine	3-Rehabilitation	
Immunity	Vaccine	3-Rehabilitation	
Immune	Vaccine	3-Rehabilitation	
Immunity	Vaccine	3-Rehabilitation	
Personnel	Personnel	3-Rehabilitation	
Eradication	Out of scan		

Within the scope of the research, out of a total of f=3065 pre-coded postings, f=2495 posts were regarded in scope, whereas f=570 posts were out of Scope.

Table 2- Sharing Precoding Statistics

Type label	Share counts (<i>f</i>)	Share Percentage
In Scope	2495	%81,40
Out of scope	570	%18,60

When the data were analyzed in terms of disaster response process management, it was observed that f=2495 shares are made, and these shares are mostly related to the response process with f=1504, followed by the recovery and prevention/damage reduction processes.

Table 3- Disaster Response Stages Statistics

Disaster Response Phase	Share counts (<i>f</i>)	Share Percentage
Rehabilitation	698	%27,90
Intervention	1504	%60,28
Prevention/Harm reduction	295	%11,82

When disaster response process management was examined in terms of sub-concepts, it was determined that “epidemic” is the most shared theme in the response process, with $f=646$ posts. In addition, “vaccine” is the most shared issue regarding the recovery process, with $f=639$ posts. On the other hand, both of the “closure and isolation” themes related to the prevention/damage reduction process were shared $f=97$ times.

Table 4- Disaster Response Sub-Concept Statistics

In-scope Tags	Share counts (<i>f</i>)	Share Percentage
Rehabilitation		
Vaccine	639	2%5,61
Personnel	57	%2,28
Intervention		
Covid-19	150	%6,01
Field survey	28	%1,12
Patient	184	%7,37
Mask	158	%6,33
Distance	45	%1,80
Mutation	5	%0,20
Epidemic	646	%25,89
Cleaning	4	%0,16
Test	14	%0,56
Case	227	%9,10
Death	26	%1,04
Virus	17	%0,68
Prevention / Harm reduction		
Isolation	97	%3,89
Closing	43	%1,72
Controlled social life	97	%3,89
Social Isolation	23	%0,92
Social Distance	20	%0,80
Data pollution	15	%0,60

When the terms excluded from the scope of disaster response process management due to expert opinions were examined, it was seen that $f=570$ sharings contain these terms. Moreover, $f=101$ of these posts are related to “other disasters” that took place during the outbreak.

Table 5- Kapsam Dışı Kavramlar İstatistiği

Out of Scope Labels	Share counts (<i>f</i>)	Share Percentage
Commemoration	57	%10,00
Other	88	%15,44
Other disasters	101	%17,72
Administrative messages	19	%3,33
Personnel	44	%7,72
Political message	84	%14,74
Condolence	80	%14,04
Congratulate	97	%17,02

Examining the changes in the sharings over time, it was found that the first posts were shared at the end of February 2020, with 2 posts containing the “isolation” theme, and this theme was the most common theme with 138 posts in March 2020, and a monthly average of $f=113$ postings were shared. It was determined that the “epidemic” theme, which has the highest sub-concepts, is frequently shared over time, and “vaccine” is the frequently shared topic as of January 13, 2021, when the vaccination experiments were completed and the vaccination process began.

Table 6 Monthly share statistics

	2020		Total Share (<i>Month-ly</i>)	2021		Total Share (<i>Month-ly</i>)
		<i>f</i>			<i>f</i>	
January	-	-	-		39	78
February	Isolation	2	2		27	54
March	Isolation	53	138		30	75
April	Ep-	38	130	Ep-	19	66
May	Ep-	43	134		21	54
June		29	114		100	147
July	Ep-	39	112		122	186

August	Ep-	42	147		98	176
Sep- tember	Pa- tient	33	115		54	127
Octo- ber	Ep-	67	121		51	118
No- vem- ber	Ep-	49	173		33	81
De- cember		31	145	-	-	

Discussion

Although disasters are classified in a variety of ways, they are generally divided into two categories: natural and artificial (human-induced) (AFAD, 2022; Babaoglu, 2020). Natural disasters of geological origin include earthquakes, landslides, tsunamis, and volcanic eruptions, whereas disasters of meteorological origin contain lightning, floods, overflows, tornadoes, droughts, avalanches, and air pollution. Artificially developing man-induced disasters, on the other hand, are classified as fires, biological epidemics, cyber-attacks, work accidents, and nuclear accidents (Hüseyin Gökçekuş et al., 2018). Disasters strongly affect human life and social order (Altun, 2018). These effects are based on economic and social indicators. Disaster management aims to minimize the harmful impacts of disasters both before and after they strike. Public organizations are at the center of disaster management. They use mass media to eliminate negative consequences and manage the process effectively with the traditional disaster management strategy. While the use of traditional media tools in the disaster process provides one-way communication, social media allows two-way communication (Şahinsoy, 2017). For this reason, public organizations have started to use social media within the scope of modern disaster management. However, two-way communication usage in disaster management triggers communication parasites, information pollution, and resulting administrative problems. Today, with the increase in technological opportunities, due to the digitalization of mass media and the expanding role of social media in digital communication, the negative impacts of natural and man-caused disasters are expressed in social media shares. In this regard, social media emerges as an area that should be investigated within the scope of disaster management. Examining the literature within these limitations, it was discovered that there are many studies on the management of natural and man-induced disasters through mass media and social media.

Social media shares are included in the disaster process from the moment disasters occur. In her research, Karakulakoglu (2015) stated that in cases where traditional media is insufficient in disaster management, information is shared faster and more effectively via social media. During natural and man-caused disasters, social media users utilize social media platforms such as Twitter to publish text and multimedia content to report up-to-date information about injured,

dead, missing, or found persons, as well as infrastructure damage (Alam, Ofli and Imran, 2018). The reason for this situation is the inadequacy of traditional disaster management in recent years and the discovery of social media as a vital tool in the face of this inadequacy. In Sri Lanka, a study was conducted that aimed to provide support to disaster victims in terms of disaster management with the adoption of social media use (Shandraseharan and Kulatunga, 2021). In the research, to determine the benefits and limitations of social media use, data were obtained via a case study, and then the data were analyzed with content analysis. As a result of the study, it was found that the most common benefit of using social media is early warning.

One of the fundamental issues in a crisis arising after disasters is the verification of information emitted through digital channels and the elimination of communication interference. According to Yu et al. (2021) social media is a significant component in catastrophe and health-related communication opportunities. They conducted a study on communicative disorders and information pollution during the COVID-19 outbreak (Meng Yu et al., 2021). They analyzed 10,132 online TripAdvisor posts about disaster and tourism. They examined the initial information on the response of social media to COVID-19 and concluded that there was a dynamic change in communication on social media due to risk perception and communication intensity and the rapid and unpredictable spread of the epidemic. They predicted that the misleading news headlines on social media during the epidemic could have a negative impact on destinations, including the image they reflect and racial discrimination. In another study, Bilgiç and Akyüz (Bilgiç and Akyüz, 2020) stated that public organizations should use mass media successfully in times of crisis and present accurate information to the public quickly and reliably. Using the content analysis method, they investigated the Twitter posts of Minister of Health Fahrettin Koca between March 11, 2020, when the first case was seen, and April 10, 2020, when the first curfew was imposed during the COVID-19 pandemic process. As a result, they found that in 161 posts, including text, video, and visuals, the Minister mostly used the words “health”, “coronavirus” and “precaution” and least used the phrases “mask”, “pandemic”, “contagious” and “social distance”. Also, they evaluated that Minister Koca’s posts were frequently followed by the public, and public confidence was established through the use of social media. In separate research, Abd-Alrazaq et al. (2020) economic, and psychological well-being of humanity. Individuals, organizations, and governments are using social media to communicate with each other on a number of issues relating to the COVID-19 pandemic. Not much is known about the topics being shared on social media platforms relating to COVID-19. Analyzing such information can help policy makers and health care organizations assess the needs of their stakeholders and address them appropriately. Objective: This study aims to identify the main topics posted by Twitter users related to the COVID-19 pandemic. Methods: Leveraging a set of tools (Twitter’s search application programming interface (API) aimed to determine the main subjects that individuals and organizations shared about the COVID-19 pandemic on Twitter, the communication channel they use to get information about the pandemic process. As a result, they determined that social media provides an opportunity to disseminate health information to the general audience. They also suggested that health institutions could establish national and international disease detection and surveillance systems by monitoring social media.

Disaster management is possible with the reflexes to be given by public institutions and organizations before and after disasters. The Disaster and Emergency Management Presidency

(AFAD) is primarily responsible for all possible or occurred natural and man-induced disasters within the borders of the Republic of Turkey (“AFAD,” 2022). In light of its primary mission, AFAD creates an effective and fast communication network in disasters by using social media. In their study, Oran and Alkan (Oran and Akan, 2021) examined the posts of AFAD on its Twitter account with the content analysis method within the scope of risk communication and disaster management. Accordingly, they have grouped tweets of AFAD between March 11, 2020 and December 31, 2020, under the headings of notification, preventive message, state of emergency, and recovery according to the risk communication process. In addition, they classified the posts as “earthquake, meteorology, accident-poisoning-fire-explosion, Covid-19, aid activities, events, international recognition studies, commemoration-special day-festival messages”. As a result, they determined that the shares made by AFAD in the context of risk communication have a significant effect on eliminating anxiety and uncertainty.

The diversity of social media channels necessitated the examination of other social media platforms in addition to Twitter in academic research. For example, in a study conducted in Iran in 2020, Instagram posts related to negative situations experienced during the COVID-19 epidemic process were analyzed within the scope of disaster management (Fatemeh Niknam et al., 2021). Instagram sharings about Coronavirus or COVID-19 between February 19 and April 3, 2020 were investigated in Iran, one of the countries with the highest number of COVID-19 cases. In this context, 1612 posts from 92 accounts in total were analyzed using thematic analysis. As a result, it was revealed that analysis of social media posts during a public health crisis can provide new and realistic perspectives on the crisis and identify issues of public interest or concern.

The management of humanitarian aid processes related to disaster management during and after disasters is also frequently carried out through social media. However, with the posts on social media, humanitarian aid is getting away from its target. Dong et al. (2021) in their study, aimed to increase disaster relief efficiency by examining social media data on public attitudes towards disaster response and public demands for targeted relief items during different types of disasters through data mining and analysis. As part of the study, a total of 41,993 posts on Twitter were analyzed by dividing them into categories such as type, duration, and damage. On the other hand, one of the information sources used before and after the disaster is the newspapers. In her research, Kütükoğlu (2021) investigated the news about the Izmir earthquake of October 30, 2020, in the newspapers published on October 31, 2020, and later, with content analysis within the framework of agenda-setting theory. She examined a total of 90 pieces of news from different newspapers and determined that the newspapers gave the news usually in the headlines, and none of them included the news on the whole page.

Conclusion

During disasters, people need information about the process. In traditional disaster management, information is shared through written and visual media. Today, information reaches people via many channels, thanks to the developing technology and the increasing opportunities accordingly. The fact that this information, which is distributed through many channels, needs confirmation, influences disaster process management. Public administrations are the primary authorized body in reaching the correct information to people in disaster periods.

In the Covid-19 pandemic, one of the man-caused disasters, and first seen in December 2019, information was mostly conveyed via social media, apart from traditional media. Since this is an epidemic disease, the Ministry of Health carried out the mission of verifying the data and sharing the information related to the Covid-19 outbreak in Turkey. The Ministry performed the information verification and process management with the shares on its Twitter account.

The Covid-19 outbreak was seen for the first time on December 1, 2019, and later defined by the World Health Organization on January 11, 2020. Investigating the Twitter posts shared by the Ministry of Health via the Twitter account of Health Minister Fahrettin Koca as part of the study, it was detected that the first relevant post was shared by the Ministry of Health on February 22, 2020, after the mentioned dates. It was also observed that the shares about the epidemic grew gradually in March 2020, and the concepts used extensively in the posts were “isolation and data pollution”. The Ministry reported that the first case was seen at 12.45 on March 11, 2020, and 12 new cases were reported on March 16, 2020. The Ministry began to share the number of patients, recoveries, and deaths daily to prevent data pollution arising in disaster response processes. On the other hand, the Ministry defined the concepts case/patient on November 12, 2020, and with new definitions, the announced number of cases increased from thousands to thirty thousand as of that date. This situation has led to negative evaluations regarding process management for the first time.

Examining the related Twitter posts as part of this research, it was discovered that the “epidemic” theme was mostly included in the sharings, followed by the “vaccine”. It was also determined that the least common themes in the posts are “cleaning” and “mutation”.

In epidemic process management, it was discovered that the Ministry shared an average of $f=113$ posts monthly since March 2020, when the epidemic was first seen in Turkey. The Ministry made the first sharings within the scope of the prevention/damage reduction phase, and commonly on the themes of “isolation, data pollution, epidemic”. Looking at the November-December 2021 periods, it was observed the Ministry focused on the themes “vaccine and epidemic” as part of the recovery phase.

According to the evaluation made over the research questions, the Ministry regularly shared the number of patients, recovery, death, tests, and intensive care hospitalization rates every day to prevent data pollution and to disperse the rush atmosphere produced during the pandemic. Within the scope of the disaster response process, the posts focused more on the response phase, the least sharing was on the prevention/damage reduction phase, and the first post was shared 2 months after Covid-19 was seen in the world. It is clear from the interaction (increased number of followers, likes, and retweets) of the shares, social media usage during the disaster process has a higher impact on the disaster response process than other traditional mass media.

As a result of the study, it was determined that the Ministry of Health manages the disaster response process effectively, social media plays a more active role than traditional media, and data sharing over social media in disasters is a new paradigm for the disaster response process management. The research examined a large number of Twitter shares and based the coding of the identified themes on the Ministry of Health dictionary. In this respect, it is thought that the study will contribute to the literature about which themes the disaster response process stages will be continued.

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FAILURE OF INITIATIVE: LACK OF SITUATIONAL AWARENESS

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Abstract

An earthquake is a geological hazard. The magnitude of an earthquake is a measurement of the energy it produces. The greater the magnitude, the more intense is the shaking and the duration. An earthquake of 7.0 or higher magnitude would produce Modified Mercalli Intensities (MMI) of VIII or higher. Although earthquakes may cause significant changes in a natural environment, the sparse settlement of an earthquake-prone areas may lower the fatalities and damage in case of such an occurrence. However, the population in such earthquake-prone areas has increased over time. Thus, the increase in population in earthquake-prone areas is expected to result in an increase in earthquake losses. In Turkey, 66% of the land has active faults and earthquakes are potential risks for 96% of the land. On August 17, 1999, at 3:02 a.m. local time, a 7.4 magnitude earthquake, which continued 45 seconds, hit the Marmara Region of the country. According to official records, the earthquake killed 18,000 people and left more than 600,000 people homeless in the region at the time. The epicenter of the earthquake was 110 km away from Istanbul. It was a catastrophe for the entire country because approximately one third of the population and half of the economical infrastructure of the country were located in this region. The problems encountered showed that the country was not ready for such a large scale natural disaster. In general, the country is still not. In the aftermath of such a devastating disaster, of course, there were some efforts to overcome deficiencies in terms of emergency management. Within the context of national efforts to cope with the issue, for example, Türkiye Acil Durum Yönetimi Genel Müdürlüğü (T.A.Y.) was established to coordinate disaster management efforts. International support was also received at the time, e.g. the Project ACHIEVE (A Cooperative Hazard Impact-Reduction Effort Via Education) of the U.S. Federal Emergency Management Agency (FEMA), through which the Center of Excellence for Disaster Management (CEDM) was established by ITU; the World Bank loan for the implementation of the Marmara Earthquake Emergency Restructuring Project (MEER). Since we still do not have the technology to prevent earthquakes from happening, the goal of the emergency management should be to minimize prospective injuries and the loss of life, potential damage to infrastructure, and economic impact. Planning activities before action facilitates achieving the goals during emergencies and disasters. Pre-incident loss assessment tools must be developed to be able to assess the potential losses, identifying potential risks and hazards and to determine the strategy accordingly. The human adjustments to disasters take place following a four-stage cyclical process, namely “preparedness”, “response”, “recovery”, and “mitigation”. In this regard, data to be obtained from prediction activities at the preparedness stage can be used to shepherd mitigation efforts at all stages and by so doing, ease the way towards the response and recovery stages. In this

study, the goal is to identify potential preparedness tools in terms of information usage. Lack of situational awareness and disjointed decision making needlessly compounds and prolongs horror caused by disasters. In this context, prediction of earthquake potential has an important place in preparedness. Although programs, such as the Project TriNet, designed to predict earthquakes have had mixed success, the probability of predicting a destructive earthquake beforehand seems to be an enough reason to continue such efforts.. The USGS (United States Geological Survey) used the Project TriNet as the pilot model for the Advanced National Seismic System (ANSS). Project TriNet system is capable of rapidly advising the related parties enabling them to make informed decisions as to where to dispatch required personnel and equipment after an earthquake. Within this system, an alert network, e.g. FEMA's Integrated Public Alert & Warning System (IPAWS), may also provide a lead time which may be defined in seconds before the most damaging shaking arrives. Information dissemination about incidents should be coordinated in order to keep public informed about occurrences, to prevent incorrect information from being distributed, and to provide guidance for public and responders.

Key Words: Public Alert System, Preparedness, Response, Recovery, Mitigation

Failure of Initiative: Lack of Situational Awareness

An earthquake, which is a geological hazard, is “a sudden motion or trembling of the earth caused by the abrupt release of slowly accumulated strain by faulting or volcanic activity” (Mileti, 1999: 86). The interaction among the Earth's physical systems (lithosphere etc.), human systems (population etc.) and the constructed systems (buildings etc.) results in disaster losses (Mileti, 1999: 107). In this study, the goal is to identify potential preparedness tools in terms of data acquisition and information usage. However, it may be useful to review earthquake terminology to develop a better, and common understanding of the impacts of earthquakes.

The Richter Magnitude Scale addresses the magnitude (USGS, 1997). The magnitude of an earthquake is a measurement of the energy it releases however it does not define what is experienced by human and constructed systems (USGS, 1997; Mileti, 1999: 117). In this context, the aspects of the motion are mainly determined by “the peak velocity,” which refers to “how fast the ground is moving;” “the peak acceleration,” which refers to “how quickly the speed of the ground is changing;” “the frequency,” which refers to how energy waves vibrate; and “the duration,” which refers to “how long the shaking lasts” (Mileti, 1999: 117). Additionally, “magnitude, distance from the fault, and local soil conditions” are three important factors that determine the effects of an earthquake over people and objects (Mileti, 1999: 117). Thus, the greater the magnitude, the more intense is the shaking and the duration. The proximity of people and objects to the fault affects the intensity of the frequency they experience. In addition, local soil condition can increase the shaking in an earthquake. Mileti states that the speed of a seismic wave varies in different types of rocks, and reduces when the waves pass from rock to soil, but the intensity of the wave increases. “A soft loose soil will shake up to 10 times harder than hard rock at the same distance from the same earthquake” (Mileti, 1999: 118).

In order to express damage caused by an earthquake, not the magnitude but instead the intensity is used. In this context, the Modified Mercalli (MM) Intensity Scale is used as a ranking

based on observed effects. According to U.S. Geological Survey (USGS), the intensity of an earthquake varies depending on where the observer is (USGS, 1997). In this respect, the following are the expected effects of intensities of eight and higher (USGS, 1997): MMI of VIII produces slight damages in specially designed structures and great damages in poorly built structures with partial collapse. In the event of this size of intensity, some structures, such as chimneys, factory stacks, columns, and walls, will fall. MMI of IX produces considerable damage in specially designed structures causing partial collapse and shifting buildings off their foundations. MMI of X produces destruction of most masonry and frame structures with foundations, and some well-built wooden structures. It causes rails to bend. MMI of XI produces destruction of bridges. It causes rails to bend greatly. Masonry structures may not remain standing. MMI of XII produces total damage and distortion of lines of sight and levels (USGS, 1997). Thus, the greater the intensity, the more shaking is to be experienced. However, the interaction among aforementioned systems (the Earth's physical systems, human systems and the constructed systems) defines the losses. Therefore, an increase in population in earthquake-prone areas is expected to result in an increase in earthquake losses. So, spatial planning gains importance in this respect. Although earthquakes may cause significant changes in the natural environment, the sparse settlement of an earthquake-prone area may lower the fatalities and damage in case of such an occurrence. However, the population in such earthquake-prone areas has increased over time.

In Türkiye, 66% of the land has active faults and earthquakes are potential risks for 96% of the land (Ozdemir, 2003). It may be insightful to review some cases in terms of earthquake losses. For example, on March 13, 1992, at 7:19 p.m., a 6.8 magnitude earthquake on the Richter Scale hit the city of Erzincan. According to the records, approximately, the earthquake killed 683 people (2000 people according to unofficial estimates), injured 1500 people, and left 50000 to 60000 people homeless in the region (Comfort, 1999: 146). In the capital city Ankara, national officials learned of the earthquake within minutes and flew to the devastated city within hours but local officials and residents were seriously disabled by the event. Rescue teams coming outside of the city (including the ones from out of country) with little information on built environment and population (Comfort, 1999: 148). So, without the basic knowledge from the local level, the response system revealed an inability to function (Comfort, 1999: 151). Yet as another example, on August 17, 1999, at 3:02 a.m. local time, a 7.4 magnitude earthquake, which continued 45 seconds, hit the Marmara Region of the country (Ural, 2004). According to official records, the earthquake killed 18,000 people and left more than 600,000 people homeless in the region (Ural, 2004). The epicenter of the earthquake was 110 km away from Istanbul. It was a catastrophe for the entire country because approximately one third of the population and half of the economical infrastructure of the country are located in this region (Ural, 2004). The problems encountered in the face of that event showed that the country was not ready for such a large scale natural disaster. According to some news broadcasted in media last year, in general, the country is still not living up to the expectations yet (DW.com, 2021). In the aftermath of such a devastating disaster, of course, there were some efforts to overcome deficiencies in terms of emergency management. Among many other immediate actions taken related to earthquakes in terms of organization and cooperation in Türkiye, through Project ACHIEVE (A Cooperative Hazard Impact-Reduction Effort Via Education) of the U.S. Federal Emergency Management Agency (FEMA), 21 experts came to Türkiye to

train 30 faculty members at the Istanbul Technical University (ITU), and also, in cooperation with FEMA, ITU established the Center of Excellence for Disaster Management (CEDM) in 2001 with funding from the US Agency for International Development (HAZTURK-2005, 2005). In 2000, Emergency Management General Directorate of Türkiye was established to maintain coordination among institutions responsible for emergency response (KHK/600, 2000), and also the Marmara Earthquake Emergency Restructuring Project (MEER) was implemented (The World Bank, 2022). Reformation of aforementioned General Directorate, in a manner of speaking, paved the road to Disaster and Emergency Management Authority (AFAD). Later on, AFAD was established in 2009 under the Prime Ministry then was re-formed in 2018 as an agency under the Ministry of Interior as the sole authority on disasters and emergencies introduced the Integrated Disaster Management System (AFAD, 2022). Also, 2021 was declared to be the disaster training year by AFAD.

Since we still do not have the technology to prevent earthquakes from happening, the goal of the emergency management is to minimize prospective injuries and the loss of life, potential damage to infrastructure, and economic impact. The human adjustments to disasters take place following a four-stage cyclical process, namely “preparedness”, “response”, “recovery”, and “mitigation” (Mileti, 1999:22; Tierney, Lindell, Perry, 2001:5). Planning activities before action facilitates achieving the goals during emergencies and disasters. Emergency response plans should be prepared to develop cooperation among the institutions contributing to emergency response activities in the pre- and post-incident period and to maintain coordination and communication among institutions responsible for emergency response. Pre-incident loss assessment tools, such as seismic risk mapping and seismic monitoring, should be developed to be able to assess the potential losses and to determine the strategy accordingly. Since transportation systems may be affected by earthquakes, preventing the entrance into the affected region for assistance and blocking flow of commodities into the region, local authorities should develop capacities to deal with the potential problem. In this regard, data to be obtained from prediction activities at the preparedness stage can be used to shepherd mitigation efforts at all stages and by so doing, ease the way towards the response and recovery stages.

“The monitoring of global seismicity showed that certain areas are more prone to earthquakes than others,” and “the frequency of different-magnitude earthquakes across the globe can be estimated through statistical analysis of earthquakes worldwide” (Mileti, 1999: 182). It may also be helpful to be aware of the “potential earthquake precursors” which involve “foreshocks, changes in the groundwater table, other hydrological or hydrothermal phenomena, deformation of the earth’s surface, changes in the rock’s electrical conductivity or magnetic properties, and changes in seismic wave properties through the area in question” (Mileti, 1999: 183). Probability of prediction of an earthquake potential has an important place in preparedness. Although programs, such as TriNet, designed to predict earthquakes have had mixed success, the probability of predicting a destructive earthquake beforehand seems to be an enough reason to continue such efforts (Mileti, 1999: 183). A shift in the attitude towards emergencies from wait and see to sustainable hazard mitigation culture should be achieved. Although it would be naive to expect some short-term warning systems to significantly prevent the damage to the built environment, it’s more realistic to use such warning data to take immediate precautions to limit possible enlargement of the damage. In this context, a seismic computerized alert network may provide a short-term warning which can be

defined in seconds to enable its users to take certain safety precautions, such as initiation of electrical isolation to protect delicate computer systems, closing of natural gas valves to minimize fire hazards, stopping fixed-rail transportation systems, etc. (Alçık, 2011:50; Heaton, 1985:987,988).

The USGS used the Project TriNet as the pilot model for the Advanced National Seismic System (ANSS) (FEMA, 2021). Project TriNet system is capable of rapidly advising the related parties enabling them to make informed decisions as to where to dispatch required personnel and equipment after an earthquake. Within this system, an alert network, e.g. FEMA's Integrated Public Alert & Warning System (IPAWS), may also provide a lead time which may be defined in seconds before the most damaging shaking arrives (FEMA, 2022). The USGS is also incorporating the Uniform California Earthquake Rupture Forecast (version 3) (UCERF3) into its official estimate of California's seismic hazard, which in turn will be used to update building codes, earthquake insurance products, emergency plans, and other risk-mitigation efforts accordingly (Field, E.H. & 2014 WGCEP, 2015; Southern California Earthquake Center, 2007). By so doing, UCERF is expected to increase public safety and community resilience to earthquake hazards (Southern California Earthquake Center, 2007). The Working Group on California Earthquake Probabilities (WGCEP) develops UCERFs, which “give the probability of all damaging earthquakes (e.g., Magnitude \geq 5) throughout a region, over a specified time span, and at some level of discretization (or approximation)” (WGCEP, 2021). Using Open-Source Seismic Hazard Analysis (OpenSHA), UCERFs are deployed in a model framework which is composed of four main model components applied in succession: fault models, deformation models, earthquake-rate models, probability models (WGCEP, 2021; OpenSHA, 2021).

Also in Türkiye, there are some other local efforts, which resembles the efforts of the USGS in the United States. Within “the Istanbul Earthquake Early Warning and Emergency Response Project”, 10 strong ground motion stations were established in 2002 by Bogazici University (B.Ü.) Kandilli Observatory and Earthquake Research Institute (KRDAE), to give a warning signal about an earthquake that can cause damage, 8 seconds before the impact after the predefined threshold level value is exceeded (Alçık, 2011:61). There are some online sources of information regarding the earthquake occurrences in Türkiye. Bogazici University Kandilli Observatory and Earthquake Research Institute (KRDAE) runs a Regional Earthquake-Tsunami Monitoring and Evaluation Center (BDTIM) (Bogazici University, 2017). Mineral Research and Exploration General Directorate (MTA) of the Ministry of Energy and Natural Resources runs a “GeoScience Map Viewer” portal which provides earthquake data taken simultaneously from the National Seismological Observation Network of the AFAD (MTA, 2022). AFAD also provides data on latest earthquakes through its web portal (AFAD, 2022a). The Disaster Response Plan of Türkiye (TAMP) is issued in 2014 “to define the roles and responsibilities of the service groups and coordination units that will take part in disaster and emergency response studies, and to determine the basic principles of response planning before, during and after disasters” (AFAD, 2014). The information infrastructure of the TAMP is Disaster Management and Decision Support System (AYDES) and it is a web-based application built on Geographical Information Systems, devised to manage all resources in disaster and emergency situations (AFAD, 2022b). USGS ShakeMap Application was also implemented in 2016 within the AFAD National Strong Ground Motion Ob-

servation Network of Türkiye (AFAD TR-KYH) (AFAD, 2022c). Preliminary Damage and Loss Estimation System (AFAD-RED), integrated with earthquake observation stations and AYDES, is used for real-time estimation of losses in a disaster zone after an earthquake (AFAD, 2022c).

In addition, there are also other networks for seismic activity detection which is also available in Türkiye. As announced by AFAD, on January 05, 2022, at 06:21, an earthquake of 5.3 magnitude occurred off the Mediterranean coast, which was also felt in the Alanya/Antalya. “The Android Earthquake Alerts System” of Google had sent a warning to its users approximately one minute before the earthquake was felt, stating that there would be an earthquake (Ensonhaber.com, 2022). The alerts system, which was first introduced in New Zealand and Greece, is available now in more countries including Kazakhstan, Kyrgyz Republic, Philippines, Tajikistan, Türkiye, Turkmenistan and Uzbekistan (BusinessWorld, 2021). The system provides early warning alerts when a seismic activity is detected in the area using the built-in accelerometers in active Android smartphones (BusinessWorld, 2021)

Also, such information systems can be used to provide adequate technical and direct support to responders in order to facilitate response to basic needs of public, such as food and shelter, to maintain security, to establish communication, to conduct search and rescue activities, and to perform evacuation if necessary. Another aspect of these systems is related to post-earthquake loss assessment, which is also important to facilitate recovery efforts. Furthermore, they provide a tool to document effects of incidents, indicating their impacts on social and economic structure, and infrastructure.

Lack of situational awareness and disjointed decision making needlessly compounds and prolongs horror caused by disasters. A failure of initiative in this respect cannot be tolerated. Information dissemination about incidents should be coordinated in order to keep public informed about occurrences, to prevent incorrect information from being distributed, and to provide guidance for public and responders. But, in order to be able to disseminate correct information on time, first you have to have it and thus a tool which can make that information available. The value of community participation in reducing the loss of lives cannot be denied. But, to be able to take a part in a system, a community needs to know about it first. Also, providing guidance and technical support for organizations involved in recovery activities is important for maintaining coordination. In order to get the desired results, mitigation efforts of organizations must be coordinated. Yet, coordination depends on correct information. Information regarding the emergency situations is needed to mitigate the hazards not only before the incident but also during and after it. Same data will be used to re-define building codes and construction techniques to reduce the damage caused by built environment. Aforementioned information systems may also facilitate gathering accurate data and sharing them with necessary parties. All these information gathering efforts are a part of human adjustments to earthquake disasters, especially in terms of the mitigation. The last but not the least, in this context, it has utmost importance to develop effective ways and means of gathering information on time.

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**THE POSITIVE EFFECT OF COVID-19: THE REDUCTION IN TRAFFIC
ACCIDENTS**

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Abstract

Disasters have existed in our lives in different forms throughout history and have caused economic and social losses in societies. The types of disasters and their priority differ depending on where each country is located on the globe. Due to its geological structure, natural disasters such as earthquakes, floods, avalanches, forest fires, landslides, and technological disasters such as industrial accidents and transportation accidents are frequently seen in Turkey. Although disasters show regional differences, the Covid-19 pandemic, which caused a biological disaster, resulted in significant losses both in Turkey and the world. While the Covid-19 epidemic claimed millions of lives around the world, it also dragged countries into an economic, social, and psychological impasse. All disasters have negative impacts. These negative consequences can be direct or indirect and secondary. Despite the detrimental repercussions of the Covid-19 outbreak in many places of Turkey, it had a favorable impact on the frequency of traffic accidents. The reduction in the number of accidents and dead/injured has indirectly reduced the burden of healthcare professionals, who are at the forefront of combating the epidemic in Turkey in this process.

This study analyzed the effect of quarantine measures taken during the fight against the Covid-19 epidemic in Turkey on traffic accidents. Accordingly, the decrease in traffic accidents in March and April 2020, when full closure took place, is noteworthy. When the total number of traffic accidents in 2019 is compared to the total number of traffic accidents in 2020, it is seen that traffic accidents have decreased by 12.5%. With the gradual normalization process that began after June 2020, there has been an approximately 5% increase in traffic accidents compared to the previous year. As a result of the measures taken by the government to keep the Covid-19 epidemic under control, the mobility in traffic has decreased with the decline in travel across Turkey. Thus, the Covid-19 outbreak has reduced traffic accidents.

Keywords: biological disaster, Covid-19, traffic accidents

Introduction

The most widely used disaster classification in the world is the classification of the Emergency Events Database (EM-DAT). Disasters are divided into two groups as nature-related and technology-related (Fig.1). Natural disasters are classified as geological, meteorological,

hydrological, climatological, and biological disasters. Technological disasters, on the other hand, are categorized as industrial accidents, transportation accidents, and various accidents. When biological disasters in history are examined, it is seen that some viruses were used as biological weapons agents and caused the death of millions of people.

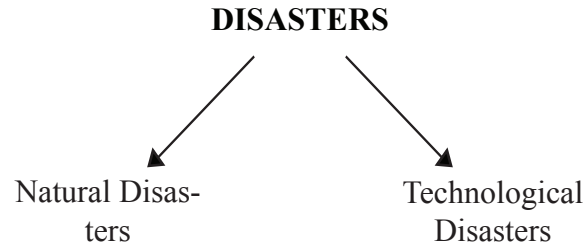


Figure 1. Disaster classification to EM-DAT

Covid-19 is an epidemic disease that started in Wuhan, China in December 2019. The Covid-19 outbreak, which quickly spread across the globe, was first detected in Turkey on March 11, 2020. Due to an increase in the number of cases since then, the government has implemented full closure and restrictions at certain periods to reduce the spread of infection and deaths. Curfews and restrictions have caused a slew of social and economic issues in this process. Nevertheless, the Covid-19 pandemic has indirectly contributed positively to the country's economy due to it reducing traffic accidents. As a natural result of the reduction in social mobility, the number of traffic accidents, fatal accidents, injury accidents, and property damage accidents decreased in March, April, and May 2020, when restrictions were applied intensely in Turkey. The number of dead and injured people has declined with the drop in traffic accidents. Thus, the burden of hospitals resulting from traffic accidents has decreased, and this situation has contributed positively to the fight of hospitals and health workers against the epidemic.

There has been a reduction in traffic accidents worldwide with the Covid-19 outbreak [Aloi et al. 2020; Sarla, 2020; Brodner et al., 2020; Shilling and Watjen 2020]. Thus, economic losses due to traffic accidents have decreased throughout the world in this process.

Within the scope of Covid-19 pandemic precautions in Turkey, as of March 21, 2020, a curfew has been imposed on citizens aged 65 and over, and as of April 3, 2020, on citizens under the age of 20. Public areas such as schools, universities, shopping malls, and cafes were closed as part of this operation. In consequence of all the restrictions and bans, travel across the country has diminished. The decrease in social mobility and travel resulted in a reduction in traffic accidents.

This research aims to analyze the effect of quarantine measures taken during the fight against the Covid-19 epidemic in Turkey on traffic accidents.

Materials and Methods

The data were obtained from the monthly traffic statistics bulletins from the website of the General Directorate of Security. The dataset includes the monthly accident statistics for the year 2019, before the Covid-19 pandemic, and for the years 2020-2021 (except for December

2021), when the pandemic process continued. For Turkey in general, the number of fatal accidents, injury accidents, property damage accidents, dead and injured, and the total number of accidents were compared before and after the Covid-19 epidemic.

Findings

Today, the number of vehicles has increased with population growth, technological developments, and industrialization. In this rapid change process, especially in developing countries, traffic and traffic accidents are always on the agenda and become one of the biggest issues. The death rates due to traffic accidents in Turkey are considerably high. Although it is a positive development that the daily traffic accidents are declining due to the decrease in mobility during the Covid-19 pandemic process, the accidents continue to increase day by day with the removal of the restrictions. Tables shows the number of traffic accidents, number of dead, number of injured for 2019, 2020, and 2021. According to the distribution of traffic accidents by the years, there is an increasing trend in the summer months.

The reason for the sudden decrease in March, April, and May 2020 is the measures taken by the government. Since June, when the restrictions began to be gradually lifted, there has been an increase in the total number of traffic accidents (Figure 2). However, traffic accidents lowered by 12.5% in 2020, when the Covid-19 epidemic started, compared to the previous year (Table 1).

Table 1. Traffic accident statistics for 2019,2020 and 2021

Months	Number of total traffic accidents			Number of fatal accident		
	2019	2020	2021	2019	2020	2021
January	33.068	31.561	24.089	130	104	117
February	28.221	31.326	22.795	106	126	85
March	32.401	31.602	30.358	122	132	116
April	31.761	15.212	26.203	154	117	126
May	32.549	19.380	26.534	164	115	161
June	35.826	30.989	35.004	210	170	182
July	37.234	35.496	43.166	225	223	246
August	36.754	37.388	43.199	253	254	238
September	36.038	34.128	42.283	191	205	222
October	35.852	34.146	39.871	226	188	228
November	32.887	29.532	39.612	175	173	160
December	33.621	24.815	-	152	112	-
Total	406.212	355.575	373.114	2108	1919	1881

Figure 2. Total traffic accidents number

When examined by years, the lowest fatal accidents were in March, April, and May 2020, when restrictions and precautions were tightened. Due to the expansion in mobility during the summer months, there was an increase in fatal accidents, followed by a drop during the winter months (Figure 3). The number of fatal road accidents reduced by 8.97% in 2020, when the Covid-19 outbreak began, from the previous year (Table 1).

Figure 3. Number of fatal accident

According to Figure 4, the lowest injury accidents were in March, April, and May 2020. When examined by years, injury accidents have risen during the summer months while falling during the winter months. The highest injury accidents were in the 2021 summer. This situation is the natural result of increased social mobility after quarantine and tight measures. The number of injury traffic accidents reduced by 14.6% in 2020, when the Covid-19 epidemic began, compared to the previous year (Table 2).

Figure 4. Number of injury accident

Table 2. Traffic accident statistics for 2019,2020 and 2021

Months	Number of injury accident			Number of property damage accident		
	2019	2020	2021	2019	2020	2021
January	10.670	11.457	8.806	22.268	20.000	15.166
February	10.015	10.291	8.580	18.100	20.909	14.130
March	12.578	10.483	12.132	19.701	20.987	18.110
April	12.711	5.457	11.070	18.896	9.638	15.007
May	13.848	7.851	12.810	18.537	11.414	13.563
June	16.710	13.577	16.957	18.906	17.242	17.865
July	17.134	16.800	20.897	19.875	18.473	22.023
August	17.352	17.087	20.212	19.149	20.047	22.749
September	15.949	15.129	19.361	19.898	18.794	22.700
October	15.426	14.703	17.971	20.200	19.255	21.672
November	13.760	11.870	16.394	18.952	17.489	23.058
December	12.474	9.335	-	20.995	15.368	-
Total	168.627	144.040	165.190	235.477	209.616	206.043

According to Figure 5, the highest property damage accidents were in the 2021 summer. On the other hand, the lowest number of property damage accidents occurred in April and May

2020. In 2020, when the Covid-19 epidemic started, property damage traffic accidents declined by 11% compared to the previous year (Table 2).

Figure 5. Number of property damage accident

According to Figure 6, the lowest death toll in traffic accidents was in May 2020, and the highest death toll was in August 2019, 2020, and 2021. Although the number of people who died in traffic accidents in 2019 and 2021 showed parallelism, it declined in April and May 2020 and increased again in the summer months. The death toll in traffic accidents lowered by 13% in 2020, when the Covid-19 epidemic began, compared to the previous year (Table 3).

Figure 6. Number of dead

Table 3. Traffic accident statistics for 2019,2020 and 2021

Months	Number of dead			Number of injured		
	2019	2020	2021	2019	2020	2021
January	160	115	137	17.520	18.689	12.782
February	121	140	110	16.111	16.273	12.492
March	145	146	145	20.102	16.437	17.616
April	179	142	147	20.552	7.747	15.672
May	192	128	179	21.872	11.513	18.538
June	261	208	228	30.031	21.293	25.298
July	290	265	297	29.300	26.684	34.228
August	298	307	301	31.844	27.865	31.639
September	246	235	254	25.785	22.782	29.037
October	270	202	268	24.754	22.034	26.537
November	189	194	180	21.967	17.629	23.907
December	182	133		19.746	13.453	
Total	2533	2215	2246	279.584	222.399	247.746

The number of injured in traffic accidents did not differ much in 2019, 2020, and 2021. However, due to the rise in measures during the pandemic in April 2020, traffic accidents and thus injuries declined significantly (Figure 7). The number of injured in traffic accidents decreased by 20.4% in 2020, when the Covid-19 epidemic started, compared to the previous year (Table 3).

Figure 7. Number of injured

Discussion

The study findings show that there has been a significant decrease in the number of traffic accidents and dead-injured throughout Turkey during the measures taken by the Turkish government to reduce the Covid-19 outbreak. Although the number of traffic accidents in Turkey differed according to the seasons and years before the epidemic, the quarantine and restriction measures taken due to the Covid-19 cases in the country in March 2020 lowered traffic accidents. Before the Covid-19 epidemic, traffic accidents in Turkey were less common in the winter months because of the weather conditions, as well as the drivers avoiding speeding and being more cautious. On the contrary, more accidents occurred in the spring and summer months due to increased social activities, traffic density, and excessive speed. With the transition to gradual normalization during the Covid-19 epidemic, a rise in accidents was unavoidable. According to Oğuzoğlu (2020), strict measures taken by the Turkish Government in April 2020 resulted in a significant decline in the number of people injured (19%) and dead (72%) in traffic accidents in Turkey. Christey et al. found that there was a 74% decrease in applications made to a level 1 trauma center in New Zealand due to traffic accidents in 2020. According to the current research, the total number of traffic accidents reduced by 12.5% in 2020 compared to 2019. With the gradual normalization process that started after June 2020, the traffic accidents raised by about 5% compared to the previous year. Deaths in traffic accidents decreased by 13% in 2020 compared to 2019 and increased by 1.4% in 2021 compared to 2020. The number of injured in traffic accidents in 2020 reduced by 20.4% compared to the previous year. Fatal traffic accidents decreased by 8.97% and injury traffic accidents declined by 14.6% in 2020 compared to 2019. Traffic accidents with property damage in 2020 fell by 11% compared to 2019. As a result of the Covid-19 outbreak, all types of traffic accidents, as well as the number of dead and injured, lowered in 2020 compared to 2019. On the other hand, the accident statistics for December 2021 could not be added to the data set since they were not disclosed. Although the number of accidents in December 2021 is missing, an increase was observed in the number of accidents in 2021 for all variables in general.

Conclusion

This study examined the decrease in the number of dead and injured in traffic accidents as a result of the measures and restrictions to combat the rapidly increasing Covid-19 cases, which first appeared in Turkey in March 2020. The Covid-19 outbreak has resulted in significant losses in numerous areas, including health and the economy, both in Turkey and around the world. Although this epidemic had many negative consequences, it contributed positively to the decrease in traffic accidents. However, this process did not last long, and with the removal of restrictions, the number of traffic accidents and dead and injured began to climb.

Traffic inspections alone are not enough to prevent traffic accidents. It is vital to provide a safe traffic environment and minimize the tendency of drivers violating the rules. This can be accomplished by raising people's traffic awareness and instilling in them the habit of obeying the rules, as well as constructing infrastructure and living spaces in such a way as to ensure traffic safety, building appropriate intersections, crossings, and parking lots, and completely making parameters such as road lane lines and warning signs. The fact that institutions in charge of highways outside of city centers take the required safeguards based on seasonal circumstances and maintain

constant control over the roadways would help to reduce traffic accidents. With technological advancements, various devices have been developed for traffic controls on highways. Thanks to the gadgets used in speed controls, all vehicles utilizing the highway are kept under control, and drivers who violate the rules are detected. The installation of these devices on highways where accidents occur frequently, as well as their widespread distribution across the country, will make inspections easier and contribute to a reduction in accidents.

In conclusion, since the highway has the highest share in freight and passenger transportation in Turkey, road traffic accidents cause significant loss of life and property. This situation negatively impacts both the country's human resources and economy. It is believed that determining the causes of traffic accidents correctly and proposing appropriate solutions will provide significant benefits to both the workforce and the economy.

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ANALYSIS OF VULNERABILITY LEVEL WITH GIS OF BUILDING STOCK TO EARTHQUAKE

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This study was carried out to determine the structural earthquake vulnerability levels of the building stock located in the Tığcılar Neighborhood of Adapazarı, the central district of Sakarya province, which consists of 84 neighborhoods, and almost all of which are located on the active earthquake zone. In the study, Simplified methods that can be used to determine the regional earthquake risk distribution of buildings in the implementing regulation of the Law on Transformation of Areas under Disaster Risk (No. 6306) was transferred to the widely used web form “Collector” of the ArcGIS CBS software, and as a result of the data collected from the field on the current maps, vulnerability levels of the buildings in the research region were determined. In this observation-based method, an initial score was given to the buildings in a certain area containing a statistically significant number of buildings, and then the factors that can create earthquake risks such as short column, soft storey, heavy overhang, and storey height, etc. were determined. Next, the negative effects of these factors on the buildings were deducted from the initial score, and thus building performance scores were yielded. While identifying the vulnerability levels of the buildings in the research region with the building performance scores calculated for all buildings, after the arithmetic mean (μ) and standard deviation (σ) values of the building performance scores were determined, “high” and “very high” vulnerability categories were obtained by subtracting the standard deviation from the arithmetic mean, and “medium” and “low” vulnerability categories were got by adding the standard deviation amount to the arithmetic mean. The vulnerability level of buildings was visualized with maps in the GIS environment in these 4 vulnerability categories determined according to Building Performance Scores. According to the results, 59 of 366 reinforced concrete buildings in the research region are in the very high vulnerability category, and they were mostly seen on the main street around the research region. 20 of these buildings with very high vulnerability were with 4-storey, 38 with 5-storey and 1 with 6-storey, and in a possible earthquake with a devastating effect, there is a risk of closing Atatürk Boulevard, which is significant for disaster logistics in the research region. As a consequence of the research, evaluations were made concerning which structures could be examined in detail to identify those at risk against earthquakes. It is envisaged that the determination of the vulnerability levels for the research region will be taken into account by the local governments in reducing the disaster risk.

Keywords: Earthquake, GIS, vulnerability, building performance score

Introduction

As it is known, earthquakes are the leading natural disasters in Turkey. After the 1939 Erzincan earthquake, the Marmara earthquake of 17 August 1999 and the Düzce earthquake of 12 November 1999 were the two most devastating natural catastrophes to strike Turkey in the recent century. One of the most critical subjects of this study is the estimation of structural earthquake damage that may occur in building type structures in Sakarya (Adapazarı) city center. This study aims to determine the earthquake vulnerability of buildings in Tığcılar Neighborhood of Adapazarı District by using the method defined under the title “*Simplified Methods that can be Used to Determine the Regional Earthquake Risk Distribution of Buildings*” in Annex-2 of the Implementing Regulation of Law No. 6306. This observation-based method is founded on the principle of determining the priorities and the regional distribution of buildings that may be risky in certain areas containing a statistically significant number of buildings as a requirement of science and technique. As a result of the scanning of all buildings in Tığcılar Neighborhood, 436 buildings were examined, and vulnerabilities were estimated under earthquake risk. In addition, evaluations were made about which structures can be examined in detail to determine the structures at risk against earthquakes. This scanning method is an approximate assessment as it contains observational information about the building, and is only used to specify the risk priority of buildings. Using such rapid assessment methods in regions where urban transformation will occur, it is possible to identify buildings with risk priority in a faster and more practical manner.

Materials and Methods

Study Area

Sakarya Province is located in the East Marmara Region. It has a total area of 4,817.00 km² and 16 districts. Sakarya has a population of 1,042,649 people. The province’s average population growth rate is about 1.50%.

The study area, Tığcılar Neighborhood, covers a total area of 216,500,337 m². It is surrounded on the west by Atatürk Boulevard, on the east by Hasırcılar Street, on the north by Kavaklar Street, and on the south by Yeni Cami Street. The total population of the Tığcılar Neighborhood in 2021 is 3,595 people. Men make up 1,807 of the population, while women make up 1,788.

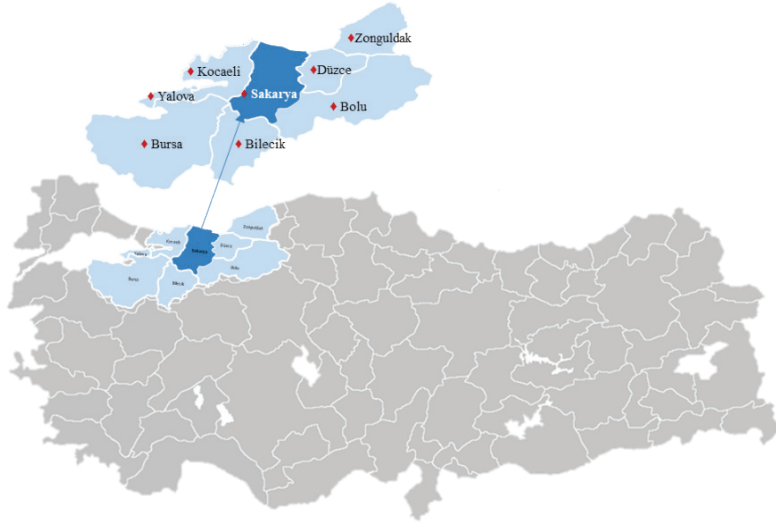


Figure 3.1.Geographical location of Sakarya province

Simplified Method Used to Determine Earthquake Vulnerability Distribution of Buildings in the Study Area

This research utilized the method defined under the title “*Simplified Methods that can be Used to Determine the Regional Earthquake Risk Distribution of Buildings*” in Annex-2 of the Implementing Regulation of Law No. 6306 to determine the earthquake vulnerability of buildings by street scanning in the Tığcılar Neighborhood of Adapazarı District.

The data collection process in the field was transferred to the widely used web form “Collector” of the ArcGIS CBS software, and according to the data collected from the field on the current maps, vulnerability levels of the buildings in the study area were specified.

In the phase of analyzing the collected data, firstly, under the method used, the Base Score (BS) depending on the Number of Free Storeys in the Building and the Danger Zone in which the building is located, and the Structural System Score based on the Structural System Type of the Building are determined as positive starting points in accordance with the categories in Table 2.1. All buildings examined in this research were designated as Danger Zone I. Whether the reinforced concrete frames (RCF) are curtain walled or not also affected the structural system score.

Then, as a result of the observation-based examination, the Negative Parameter Values (Ni) of the Apparent Quality, Soft Storey, Vertical Irregularity, Heavy Overhangs, Plan Irregularity, Short Column, Contiguous Building, and Natural Ground Slope of the building were taken from Table 2.2.

Table 2.1 Base and Structural System Score

Number of Total Storeys	(Tp) Structural System				Structural System Score (SSS)	
	Danger Zone				RCF	RCCF
	I	II	III	IV		
1 ve 2	90	120	160	195	0	100
3	80	100	140	170	0	85
4	70	90	130	160	0	75
5	60	80	110	135	0	65
6 ve 7	50	65	90	110	0	55

Table 2.2 Negative Parameter Values (NPV)

Negative Parameter No	Negative Parameter	Case 1		Case 2	
		Parameter Detection	Parameter Value	Parameter Detection	Parameter Value
1	Apparent Quality	good	0	medium(bad)	1 (2)
2	Soft Storey	no	0	available	1
3	Vertical Irregularity	no	0	available	1
4	Heavy Overhangs	no	0	available	1
5	Plan Irregularity	no	0	available	1
6	Short Column	no	0	available	1
7	Contiguous Building	discrete	0	Adjacent/Adjacent at the Corner	1
8	Natural Ground Slope	no	0	available	1

Each Obtained Negative Parameter Value was multiplied by each negative parameter score in Table 2.3, which is dependent on the number of free storeys of the building. Then, the obtained negativities were summed, the total was deducted from the Structural System Score determined for the building at the beginning, and the Building Performance Scores of the examined building were obtained.

Table 2.3 Negative Parameter Values (NPV_i)

Number of Total Storeys	Soft Storey	Apparent Quality	Heavy Overhangs	Storeys Level/ Independent Building Status				Vertical Irregularity	Plan Irregularity	Short Co-column	Natural
				same		different					
					side		side				
1	-10	-10	-10	0	-10	-5	-15	-5	-5	-5	-3
2	-10	-10	-10	0	-10	-5	-15	-5	-5	-5	-3
3	-20	-10	-20	0	-10	-5	-15	-10	-10	-5	-3
4	-30	-15	-30	0	-10	-5	-15	-15	-10	-5	-3
5	-30	-25	-30	0	-10	-5	-15	-15	-10	-5	-3
6	-30	-30	-30	0	-10	-5	-15	-15	-10	-5	-3
7	-30	-30	-30	0	-10	-5	-15	-15	-10	-5	-3

While calculating the vulnerability classification of the buildings in the study area using the Building Performance Scores, after the arithmetic mean (μ) and standard deviation (σ) values were found, the High and Very High categories were found by subtracting the standard deviation from the arithmetic mean, whereas the Medium and Low categories were found by adding the standard deviation to the arithmetic mean. Buildings were categorized into one of four vulnerability groups based on their Building Performance Scores. The obtained findings were shown thematically on the current maps.

Findings

In this study, after scanning all structures, 436 buildings were examined in the Tıgçılar Neighborhood, but only 366 reinforced concrete buildings were statistically analyzed. The buildings were classified according to earthquake vulnerability categories. Table 3.1 shows the statistical parameters of the obtained building performance scores, and Table 3.2 illustrates the vulnerability classification of buildings. Table 3.3, on the other hand, demonstrates the findings of the observation-based regional vulnerability analysis of 366 reinforced concrete buildings in the Tıgçılar Neighborhood.

Table 3.1 Obtained statistical parameters

STATISTICAL PARAMETERS	
arithmetic mean	10
standard deviation	48

Tablo 3.2 Vulnerability score range categories

Colour	Vulnerability	Building performance score range
Red	Very High	$[\leq -40]$
Orange	High	$[(-39) - (9)]$
Yellow	Medium	$[(10) - (58)]$
Green	low	$[59 \geq]$

T

Tablo 3.3 Vulnerability distribution of reinforced concrete buildings

Vulnerability	Number of buildings	Rate
Very High	59	16.12%
High	118	32.24%
Medium	111	30.33%
Low	78	21.31%

The map in Figure 3.1 depicts the regional vulnerability distribution of buildings in the study area.

Regional Vulnerability Distribution Map Of Tığcılar Neighborhood

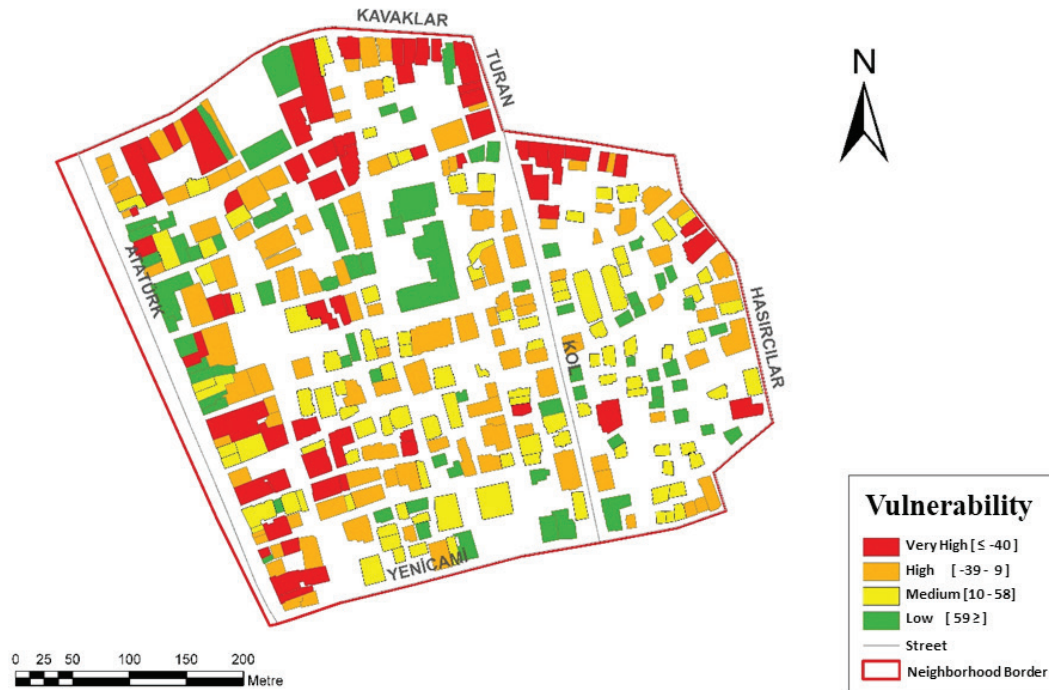


Figure 3.1 Regional Vulnerability distribution map of Tığcılar Neighborhood

Discussion

According to the regional vulnerability distribution of buildings, as a result of the analysis performed with Table 4.1, the risk rises as the number of storeys increases. The buildings with the very high vulnerability category are mainly located at the outer fringe of the neighborhood in proportion to the number of building storeys, as seen in Figures 3.1 and 4.1. In terms of disaster logistics, this situation has been rated as negative since the buildings on the side of the road are likely to close the street in a large-scale earthquake

Table 4.1 Distribution of storey numbers according to vulnerability

Vulnerability	Number of storeys					
	1	2	3	4	5	6
Very High	0	0	0	20	38	1
High	0	0	20	65	32	2
Medium	2	27	56	17	9	0
low	5	53	20	0	0	0

Distribution Of Number Free Storeys In Tığcılar District



Figure 4.1 Distribution of number free storeys in Tığcılar District

Table 4.1 shows that, according to the number of buildings in the vulnerability level category, based on the negative parameters in the Simplified method Used to Determine the Earthquake Vulnerability Distribution of Buildings, there is a general increase from the number

of low-vulnerability buildings to the very high-vulnerability buildings, and this increase is more evident in the level of vulnerability depending on the number of storeys in the building. For this reason, it is clear that this observational analysis, which is defined under the title “*Simplified Methods that can be Used to Determine the Regional Earthquake Risk Distribution of Buildings*” in Annex-2 of the Implementing Regulation of Law No. 6306, will be very useful in terms of giving a preliminary idea about the earthquake performance of the building stock in a particular region.

Conclusion

According to the research findings, 59 buildings with the very high vulnerability category were constructed in 1999 or before, have 4, 5, and 6 storeys, mostly located on the outer fringe of the neighborhood and the main roadway. These buildings were considered to be at risk of severe damage or collapse in case of a possible massive earthquake.

After the 1999 Marmara earthquake, a storey restriction was implemented throughout the Adapazarı District, and new structures were limited to a maximum of three storeys, as per the decisions taken. None of these structures were classified as having a very high or high level of vulnerability.

The distinct causes of damage caused by the foundation soil in buildings can be listed as soil amplification (soft soils enhance the amplitude of earthquake waves), liquefaction, deterioration of stability on the slopes, and the settlement on the foundation soil. In the study area, which consists of water-saturated fine-grained soft soils, the most prominent and prevalent negative effect induced by the foundation soil seen in the 1999 Marmara earthquake is the liquefaction of the soil with the effect of earthquake waves, and the decrease in the bearing capacity of the foundation soil as a result.

Since Tıgçılar Neighborhood has a flat topography, Natural Ground Slope did not affect the buildings as a negative parameter. According to the vulnerability analysis, 48.36% of the buildings have observationally high and very high vulnerability. For this reason, these buildings should be examined urgently in more detail, and the decision to strengthen or demolish the structure should be taken as a result of measurements and tests.

To avoid a large number of building stocks becoming natural disasters as a result of earthquakes, such first-stage assessment methods allow researchers to swiftly determine from which buildings they should start in the more detailed second- and third-stage experimental analysis studies.

Thanks

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NEUROPSYCHIATRIC DISORDERS IN DISASTERS

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Abstract

Among the most important problems of the century are the natural disasters affecting the entire humanity and the damage caused by these natural disasters. The effects of disasters can reach results in different dimensions that affect both the individual and society, including health, economic, social and psychological. Each year the number of individuals affected by natural disasters is also increasing. The vast majority of these individuals need psychological support. Psychological trauma after disasters affects the lives of individuals in a negative way and disrupts their mental health. One day a person experiences deep stress caused by a sudden incident (a traffic accident, a natural catastrophe, an episode of violence). Subsequently, this person could develop a serious neuropsychiatric disorder, posttraumatic stress disorder (PTSD), that may last for years or even decades. So much psychopathology can be seen in different forms in individuals when necessary psychological support is not provided. The lack of social awareness on this issue and the need arising from the inevitable psychological consequences of the disaster reveal the necessity of specialization and social support in this field. In this context, vocational experts working in the field of mental health have significant responsibilities. In this review, neuropsychiatric disorders seen in disasters are discussed in general terms.

Key Words: Neuropsychiatric disorders, Disaster, Psychopathologies

Introduction

Among the most important global problems of today, natural disasters affecting all humanity and this natural People are harmed as a result of disasters(Kukuoğlu, 2018). Disaster can be defined as “a disaster that affects the society economically and socially by causing loss of life and property, injuries, disabilities and negative environmental consequences, cannot be overcome with local resources, national or international assistance is needed, often occurs due to natural causes, but also due to human-induced causes. defined as “an unexpected event that may occur” (Bahadır et al., 2018)As a result of natural disasters that can be seen in different processes, more and more people are affected every day, and they are damaged both biologically and psychologically(Kukuoğlu, 2018).

The number of individuals affected by natural disasters is increasing every year. A large number of these individuals Most of them need psychological support. Psychological traumas after disaster It affects the lives of individuals negatively and can impair the mental health of indi-

viduals for life. So much so that when the necessary psychological support is not provided, many different forms of mental disorders can be seen in individuals, and this process can also affect the individuals around them. In this context, professional professionals working in the field of mental health have important responsibilities(Kukuoğlu, 2018).

Both natural (e.g., climate changes, heat waves, drought, hurricanes, earthquakes) and man-made (e.g., radiation, pollution, chemicals, terrorist attacks, war) emergencies, which are often coupled, may represent unspecific traumatic stressors often resulting in the impairment of well-being and/or physical and mental health deterioration. If it is now evident that psychopathological disorders are the result of the association of individual (genetic) vulnerability coupled with environmental factors acting on epigenetic mechanisms, it is also true that different emergencies may provoke specific neurotoxicity and biological adaptive responses, leading to characteristic neuropsychiatric effects(Loganovsky et al., 2021).

Neuropsychiatry or organic psychiatry is a branch of medicine that deals with mental disorders attributable to diseases of the nervous system. Neuropsychiatry, also known as behavioral neurology, refers to a relatively new branch of medicine that includes two disciplines - neuropsychiatric disorders - both neurology and psychiatry and the treatment of pathologies⁴.

It is now well known that environmental pollution and climate change might negatively impair several physiological systems and organs of individuals of all ages, possibly being involved in perinatal disorders, respiratory and cardiovascular disorders, allergies, cancer, and neurological and mental disorders.(Marazatti et al., 2021) It is especially important in this historical period when humanity is facing a severe coronavirus pandemic, which is the biggest disaster in recent years, called the severe acute respiratory syndrome coronavirus (SARS-CoV-2), which emerged in the Hubei region of China and spread all over the world in a short time (Marazatti et al., 2021).

Increasing evidence has shown the negative impact of the SARS-CoV-2 pandemic on the psychological health of the world's population due to both biological and psychosocial factors (Marazatti et al., 2021, Xiang et al., 2020, Galea et al.,2020, Pfefferbaum et al., 2020). Uncertainty about how many people have contracted the disease, fear of getting infected and/or infecting family members, mortality rate, uncertainty about the effectiveness of treatments have created a sense of bewilderment and distrust among the entire world population (Marazatti et al., 2021, Xiang et al., 2020, Galea et al.,2020, Pfefferbaum et al., 2020, Brooks et al., 2020). Intense media exposure to news of COVID-19 has been associated with an even higher prevalence of depressive symptoms, anxiety, and sleep disturbances (Marazatti et al., 2021, Watel et al., 2020).

Mass quarantine, a countermeasure applied in several countries to reduce the spread of the pandemic, was likely to increase community anxiety, as it increased perception of danger, reduced the sense of security and certainty, caused feelings of loneliness, unpredictability, and lack of control over one's life (Watel et al., 2020). Some of the first studies on effect of confinement showed an increased prevalence of psychiatric symptoms and disorders, especially depressive symptoms, anxiety and insomnia, as well as increased need of psychological support (Marazatti et al., 2021, Watel et al., 2020). Woman and young adults resulted the most affected people by psychological distress, in accordance with previous research that concluded that these population groups are the most vulnerable to stress and more prone to develop PTSD (Marazatti et al., 2021,

Watel et al., 2020, Marazziti et al., 2020).

Some studies have directly investigated neuropsychiatric symptoms and/or disorders in COVID-19 patients (Marazatti et al., 2021). Data on SARS reported that during acute epidemics approximately 20–40% of patients suffered from neuropsychiatric symptoms, including delirium, insomnia, anxiety, and depression (Marazatti et al., 2021, Rogers et al., 2020, Zhou et al., 2020, Yao et al., 2020, Benson et al., 2020). It has been determined that the neuropsychiatric manifestations of COVID-19 are directly related to the increase in peripheral immunological markers, the severity of the infection and the mortality rate. (Marazatti et al., 2021). Psychiatric patients are at increased risk of infection compared with the general population, due to the difficulties in adhering to public health measures, such as frequent hand-washing and physical distancing, as well as to poor understanding of the infection risk (Marazatti et al., 2021, Zhou et al., 2020, Yao et al., 2020, Benson et al., 2020).

In one study; Neuropsychiatric syndromes reported by psychiatrists or neuropsychiatrists are psychosis, neurocognitive dementia-like syndrome, personality change, catatonia, mania, anxiety or depression, chronic fatigue syndrome, and post-traumatic stress disorder. Again in the same study; New-onset psychosis was detected in 10 (43%) of 23 patients with neuropsychiatric disorder out of 153 patients with Covid-19, and neurocognitive (dementia-like) syndrome was detected in 6 (26%), and four (17%) had an affective disorder (Varatharaj et al., 2020).

Climate change, pollution, and virus-triggered outbreaks, such as the current COVID-19 pandemic are all naturally occurring, catastrophic events involving the whole world, with different timescales, but similar consequences on individuals and collectivity, in terms of both health and socio-economic aspects (Marazatti et al., 2021). Air pollutants were associated to the pathophysiology of different psychiatric disorders, such as psychotic, depression, anxiety, and neuropsychiatric disorders (Marazatti et al., 2021, Attademo et al., 2020, Costa et al., 2020).

Literature review suggests that overall climate change, pollution and COVID-19 may increase the risk of mental disorder. The prevention of pandemics and their mental consequences requires the promotion of global interventions to reduce climate change and air pollution (Marazatti et al., 2021).

Situations that require immediate psychological support are defined as crisis. The crisis that develops after the disaster directly or indirectly affects the individuals. Psychological traumas seen after the crisis can be seen at different levels in each individual. Psychological traumas that develop after a disaster can be permanent as well as temporary, and this affects everyone's life process. So much so that these effects can be seen in different ways with individuals, families and societies. For example, it is encountered with different diagnoses in psychopathological dimensions such as post-traumatic stress syndrome or major depression, which can develop after a disaster (Özkan et al., 2021).

Stress is considered a primary risk factor for most neuropsychiatric disorders, including depression, anxiety, and PTSD. The latter is probably the single disorder where the relationship with traumatic stress is more evident. Indeed, although not always this applies, PTSD is often triggered by exposure to a single traumatic experience, such as a traffic accident, a natural catastrophe, or an episode of violence (Musazzi et al., 2018). Posttraumatic stress disorder (PTSD) is the most

commonly studied outcome in the aftermath of disasters. However, other psychiatric disorders, such as depression, anxiety disorders and substance abuse, are also quite common though less documented (Hüseyin et al., 2011). In a study; Disaster workers exposed to the events of September 11, 2001 (N=207) and unexposed comparator subjects (N=421) were studied 2, 7, and 13 months after the plane crash. Workers exposed to disaster have significantly higher rates of acute stress disorder, PTSD at 13 months, depression at 7 months, and depression at 13 months than comparison subjects. Those with high exposure and previous disaster experience or acute stress disorder were more likely to develop PTSD (Fullerton et al., 2004). In a 2011 study, 63 Norwegian tourists who survived the 2004 tsunami in Khao Lak, Thailand were interviewed face-to-face 2.5 years after the disaster. Nearly two-thirds of Norwegian tsunami survivors met the diagnostic criteria for a neuropsychiatric disorder 2.5 years after the disaster. Phobias and depressive disorders are the most common disorders among tsunami survivors. The post-tsunami incidence of PTSD (36.5%) and MDD (28.6%) was higher among our heavily exposed disaster victims than is generally reported in studies of natives affected by the 2004 tsunami (Hüseyin et al., 2011).

The constellation of depression and physical symptoms is another example of neuropsychiatric disorders with symptoms that are physical, psychological, and cognitive (4). Common neuropsychiatric disorders are seizures, cognitive disorders, uncontrolled anger, attention deficit, migraine headaches, and different types of paralysis, among other pathologies (4).

In a 2021 study, the findings strongly suggest that cleaning workers show an increasing prevalence of cognitive, emotional, and stress-related neuropsychiatric disorders with increased radiation dose. It points to a high prevalence of cerebrovascular diseases, organic psychoses, mental and depressive disorders, cognitive impairment and even dementia, increasing with radiation dose. The purpose of this article is to summarize the evidence from some studies that show “real data” on the prevalence and types of neuropsychiatric disorders in the long-term following the Chernobyl disaster (Loganovsky et al., 2021).

Disaster-related traumatic experiences have been linked to declines in working memory and exacerbation of dementia among older adults (Shiba et al., 2021, Hikichi et al., 2016). Postulated mechanisms include posttraumatic stress disorder (PTSD) and depression (both risk factors for cognitive disability), decline in social participation (Shiba et al., 2021, Günak et al., 2020). In a study; Housing damage and loss of relatives or friends after the disasters in 2011 were found to be significantly associated with cognitive decline in the 65 and older group. The most important result found in the light of the collected data is the diagnosis of dementia, which was confirmed by the in-home evaluation during the follow-up period. Cognitive decline should be listed as a health risk for seniors who survive natural disasters. Seven months before the disaster, their health was surveyed as part of an ongoing study of aging. Two and a half years after the tsunami, the researchers conducted a follow-up survey among the same group. In the pre-tsunami survey, 4.1% of the participants were rated with dementia symptoms; increased to 11.5 percent after the tsunami. People who are injured in temporary housing after their homes have been destroyed or severely damaged have the highest levels of cognitive decline (Hikichi et al., 2016). In another study; examines how complex disasters affect patients with dementia. In this study, a significant increase in the proportion of patients with dementia was found among all new patients after the

complex disaster (Great East Japan Earthquake, accident at Fukushima Daiichi Nuclear Power Plant)(Miyagawa et al., 2021).

Conclusion

As a result of natural disasters that can be seen in different processes, more and more people are affected every day, and they are damaged both biologically and psychologically. Psychological traumas after disaster It affects the lives of individuals negatively and can impair the mental health of individuals for life. So much so that when the necessary psychological support is not provided, many different forms of psychopathology can be seen in individuals, and this process can also affect the individuals around them. Although neuropsychiatry is a relatively new branch of medicine that includes both neurology and psychiatry and the treatment of pathologies, neuropsychiatric disorders, especially depression and PTSD, cause significant functional impairment. Thus, health authorities as well as clinicians should recognize the importance of diagnosing psychiatric disorders at an early stage after a disaster. An early treatment program should be organized for those with significant post-disaster stress. Concurrently, it would be helpful to provide mental health planning, counseling and other ongoing supportive programmes. Individuals with severe and persistent psychopathology as well as neuropsychiatric disorders should be followed up by specialist mental health professionals. The clinicians must take psychiatric disorders other than PTSD, especially depressive disorders, into account when assessing the long-term effects of disasters. It is a priority to invest in mental health services and programmes at national level, because without mental health for our young people there is no future. Last, but not least, we recommend that specialists in psychiatry should be well-educated in ecological psychiatry, given the increasing and unprecedented occurrence of dramatic disasters worldwide. It is also essential that psychiatry takes into account these suggestions in order to be not only a front-line but a sustainable specialty.

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TRAUMATIC INJURIES IN DISASTERS**Ayça Çalbay¹**¹ *Gulhane Training and Research Hospital, Ankara, Turkey***Introduction**

Disasters are events that stop or interrupt normal life for a certain period of time. Disaster types are categorized under five main headings: geological, climatic, biological, social and technological disasters. Earthquakes, landslides, tsunamis, tornados, cold waves, fire, epidemics, mine accidents, wars, and CBRN (chemical, biological, radioactive, nuclear) events are destructive disaster types that cause large masses to be affected (1). As with all trauma patients, an “ABCDE” evaluation of a disaster victim should be made and the patient should be examined from top to toe. Before these procedures, the appropriate triage should be done. If needed, decontamination should be provided. After the patients are stripped, precautions should be taken to protect the patient from hypo/hyperthermia and dehydration. Resuscitation interventions for life-threatening injuries should be initiated without delay. In this section, life-threatening traumatic injuries that are frequently observed in disasters will be mentioned.

Crush Injury/Crush Syndrome

Crush injuries occur when the trunk, extremities, or any part of the body is exposed to an external crushing force. Impaired perfusion of injured tissue leads to the development of ischemia. Sequelae that occur after tissue reperfusion also cause crush injuries. The most common presentation is acute renal failure. In order to prevent this situation, clinicians should quickly recognize the crush injury and start appropriate fluid replacement as soon as possible in a short time interval.

Extremity Injuries

As in many types of injuries, extremities are among the most frequently injured body parts in disasters. Injuries can be in the form of simple soft tissue damage or require a multidisciplinary approach that requires more serious interventions. Amputation, brachial plexus injury, long bone fractures that can cause serious blood loss, open fractures and associated fat emboli are the injuries of crush syndrome. It should be kept in mind that casualties with this type of serious injury may have other injuries that often involve other parts of the body.

Acute Compartment Syndrome

This is characterized by increased pressure in extremity sections covered by the fascia and the abdomen. Capillary perfusion is impaired in extremity, and bone tissue may also be affected. Increased pressure may affect the respiratory cardiovascular system and renal system, causing a multisystemic picture.

Blast Injury

Some initial factors that should be known in order to be able to make an effective intervention in blast injuries are: - Mechanism of injury - The injury itself - To have a command of

management suitable for injuries. In blast injuries, the area most likely to be damaged is the head and neck. The five most common injuries in deaths are; brain injury (66%), skull fracture (51%), diffuse lung contusion (47%), tympanic membrane rupture (45%) and liver laceration (42%).

Inhalation Injury

Inhalation injuries describe the damage caused by the air, particles, chemicals, heat and smoke taken into the airway by inspiration; often used synonymously with smoke inhalation. It not only affects the lungs, but also causes systemic poisoning.

Cold Injuries

Cold injuries vary according to exposure to heat, duration of exposure and individual factors.

Drowning

Water-borne natural disasters such as floods and tsunamis occur with the effect of a great force. Most of the drowning happens when the patient is immediately in the water and suffers from hypoxic cardiac arrest, after which hypothermia develops.

Psychological Problems

Natural disasters are a serious source of stress in the moment of the disaster and during the next process. Living with anxiety for both themselves and their relatives creates psychological burdens that people cannot cope with.

Keywords: Blust injury, Cold injury, Disaster, Drowning, Injury

Introduction

Disasters are events that stop or interrupt normal life for a certain period of time. As with all trauma patients, an “ABCDE” evaluation of a disaster victim should be made. The patient should be examined from top to toe. The appropriate triage should be done. If needed, decontamination should be provided. Precautions should be taken to protect the patient from hypo/hyperthermia and dehydration. Resuscitation interventions for life-threatening injuries should be initiated without delay.

Crush Injury/Crush Syndrome

Crush injuries occur when the trunk, extremities, or any part of the body is exposed to an external crushing force. Compression caused by the force applied creates a direct trauma in the tissue. In major earthquakes, 3-20% of those patients injured by the collapse of buildings have crush injuries (2). Impaired perfusion of injured tissue leads to the development of ischemia. Sequelae that occur after tissue reperfusion cause crush injuries. Systemic symptoms occurring after crush injury may result in organ dysfunction and death called crush syndrome (3). Cellular death can lead to myonecrosis. Potassium, phosphorus, and myoglobin released from the injury site within 20 minutes of recovery could cause ventricular fibrillation and sudden death, ‘smiling death’ (4). Death together with acute renal failure due to crush syndrome has been observed many times after major earthquakes.

Confined Space Medicine/Crush Injury

Tunneling and support debris are required for the rescue of survivors. In this case, the intervention and transfer relating to the patient will not be in the form of the usual container. Interventions made in the current situation are called confined space medicine (5). It is necessary to wear equipment and make preparations to manage and protect dust, excessive temperature, dangerous substances and gas, explosion, fire, and the possibility of re-collapse. If the crush injury is caused by non-earthquake situations, such as bombing or mine collapse, it is also necessary to protect victims from blast injury, fire and inhalation of toxic agents.

Airway Support, Breathing, and Circulation

A crush injury in the thorax is a major cause of respiratory failure. Traumatic asphyxia, irritant and toxic gases and respiratory tract irritation and damage may cause an advanced airway/surgical airway. If the patient has injuries such as pneumothorax, hemothorax, flail chest, or pulmonary contusion along with the crush injury, a chest decompression may be required (needle/finger decompression, tube thoracostomy). Hyponatremia may be observed who are under a weight for a long time. Dehydration is the most important and fatal cause of hypovolemia. Bleeding and burns are other causes. Bleeding from the trauma itself may not manifest itself as long as the injury site is under pressure. Findings can be preserved until the moment of recovery. The first intervention in preventing deaths due to hypovolemia and crush injury is fast access to isotonic solutions and at least one large lumen vein. Fluids containing K should be avoided. Urine output in the patient is an important evaluation criterion in terms of patient monitoring. Initially, the patient is given a bolus of 1000 ml/hour of normal saline solution iv within 2 hours. Afterwards, maintenance treatment is started at a dose of 500 ml/hour. If the patient has known heart failure, kidney failure, or chronic obstructive pulmonary disease, hydration is planned at low doses such as 10 cc/kg.

Extreme Reperfusion and Hyperkalemia

If electrocardiography can be performed T spikes due to hyperkalemia and enlarged QRS waves can be detected. In this case, Ca gluconate/Ca chloride treatment can be given. Inhaled albuterol therapy and iv insulin therapy should used in the treatment of hyperkalemia. It is not recommended to apply a tourniquet. Fasciotomy at the scene is not recommended due to the high risk of infection. When the extremities under load cannot be removed from the wreck, field amputation is performed as a last solution. Some rescue teams have a trained emergency surgery that can perform field amputation.

Extremity Injuries

Amputation, brachial plexus injury, long bone fractures that can cause serious blood loss, open fractures and associated fat emboli are the injuries of disasters. The presence of bleeding/open wounds at the injury site, vascular/nerve injury and circulatory disturbance in the affected area should be evaluated. Direct pressure should be placed on the bleeding area. Injured area should be cleaned. Covered with a moist sterile dressing. Tetanus prophylaxis and early antibiotherapy. In the presence of vascular injury or amputation, a tourniquet can be applied just proximal to the injury site. Should be followed closely. Applying hour and minute should be noted. Blood flow should be provided by loosening the tourniquet at intervals of 10-15 minutes.

Acute Compartment Syndrome

This is characterized by increased pressure in extremity sections covered by the fascia and the abdomen. Capillary perfusion is impaired in extremity, and bone tissue may also be affected. Increased pressure may affect the respiratory, cardiovascular system and renal system, causing a multisystemic Picture. Acute compartment syndrome (ACS) is an emergency requiring an emergency surgery indication. The most common regions on extremities are the legs and forearms (tibia diaphysis and distal radius). The diagnosis of ACS is made by examination findings and the measurement of compartment pressure

Findings suggestive of ACS are:

- Pain disproportionate to the injury
- Persistent deep or burning pain
- Paresthesias (paresthesias between 30 minutes and 2 hours are indicative of ischemic nerve damage and suggest ACS)
- Pain caused by passive stretching of the muscles in the affected compartment (early finding)
- A tense compartment that feels hard “like wood”
- Pallor due to vascular insufficiency (not always)
- Decreased sensory sensitivity
- Weakness of the affected muscles (starts within about two to four hours of ACS)
- Paralysis (late finding)

All manometers measure resistance from tissue pressure after a small amount of saline is injected into a closed compartment. Compartment pressure measurements can be made by connecting 18-gauge needles directly to the devices which measure arterial pressure in places where there is no hand monitor or measuring device. The pressure of a normal compartment varies between 0 and 8 mmHg. Pain may develop when tissue pressures reach between 20 and 30 mmHg (6). Ischemia occurs when tissue pressures approach diastolic pressure.

Blast Injury

Primary blast injuries are caused by the blast wave and have severe effects. Airfilled and luminal organs are more affected. The lungs, ears, and gastrointestinal tract are the most sensitive. As the wave passes through the body, it causes damage through four mechanisms:

- Particle
- Explosion
- Non-interaction (acceleration/deceleration)

Pressure differences

The human body usually resists being thrown, but injuries occur when it hits the ground or surrounding objects.

Inhalation Injury

Describe the damage caused by the air, particles, chemicals, heat and smoke taken into the airway by inspiration. The direct systemic effects of inhalation injuries develop as a result of the burning and decomposition of burning materials. Carbon monoxide poisoning is one of the most common causes of death after inhalation injury. Hydrogen cyanide poisoning can be initiated in burn patients with loss of consciousness, cardiac arrest and cardiac decompensation. The severity of the injury will depend on many factors:

- the size and diameter of the particles in the smoke,
- the duration of exposure
- the content of the gas exposed
- the solubility of the gases
- the ignition source

Cold Injuries

Cold injuries vary according to exposure to heat, duration of exposure and individual factors. Frostbite, also known as a cold bite. Seen without freezing are observed after being in wet environments. Trench foot and pernio are injuries in this group. The cardiovascular response to cold is in the form of deep peripheral vasoconstriction and an increase in heart rate and blood pressure. This is followed by progressive bradycardia, hypotension and myocardial irritability. Below 32°C, the risk of arrest increases as malignant cardiac arrhythmias increase. Atrial fibrillation and flutter are expected arrhythmias (7).

Drowning

Water-borne natural disasters such as floods and tsunamis occur with the effect of a great force. Patients removed from the water should be rescued in a supine position to reduce the risk of orthostatic and hydrostatic change. Most of the drowning happens when the patient is immediately in the water and suffers from hypoxic cardiac arrest, after which hypothermia develops. In these patients, prolongation of resuscitation is recommended.

Psychological Problems

Natural disasters are a serious source of stress in the moment of the disaster and during the next process. Living with anxiety for both themselves and their relatives creates psychological burdens that people cannot cope with. Many negativities such as injuries during the moment and after the disaster:

- observing what is happening in the environment

- not being able to meet other victims in need
- not being able to reach their loved ones or
- losing their loved ones are a trauma element for individuals (8)

For some people, a negative event is easy to overcome, while for others it is much more difficult. In the recovery process, people may make negative orientations such as alcohol consumption.

Conclusion

As a conclusion the management of injuries to persons in the event of a disaster requires a multisystem approach. Recognition and prompt treatment of some specific injuries is life-saving.

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DISASTER AND EMERGENCY MANAGEMENT LOGIN**Selçuk SİNCAR¹***¹ Atatürk University Vocational School of Technical Sciences***Introduction**

Our region is a country where many types of disasters are in large quantities, and besides disasters, it also encounters humanitarian crises due to its geopolitical position.

The basic philosophy in disasters is what we can do after the disaster; “that is, how can the workplace, business or the living environment be restored as quickly as possible with the least damage?” is the main study topic.

Today, the rapid progress of industry and technology, and the settlements where population density and urbanization increase as a result, and the fact that our country is in a location where disasters are most common, show us how important disaster awareness, disaster and emergency situation are. It is thought that this will increase the risk of loss and damage, especially in terms of the concentration of these urbanizations in the Marmara region and the fact that disasters such as earthquakes occurred earlier in this region and the earthquake risk is higher in this region.

What is important here is to reduce these risks as much as possible, to be prepared for unavoidable risks, to plan what to do in disasters and emergencies, and to implement plans during disasters.

If we divide the struggle against disaster into three parts: before the disaster, during the disaster and after the disaster, the most important of these studies is the pre-disaster practical work.

Before the disaster, mitigation and preparatory studies can be done. In mitigation efforts, it should be aimed to educate people about emergencies and disasters and raise awareness, and as a result, reduce casualties and injuries by taking simple precautions. The main element here is to minimize the risk of disaster and to survive the disaster with the least loss of life and property by making quick and conscious intervention during the disaster. In addition, being prepared for the negative effects of disasters for people and taking precautions means being prepared to intervene with the most appropriate organizational methods.

During and after the disaster, crisis management studies are carried out to prevent the increase in loss of life and property in the post-disaster period. The basic philosophy here is to save the lives of a large number of people as soon as possible, to intervene with the injured, to meet the needs of those outside, namely shelter, food, clothing, drink, water and so on, with the most appropriate methods as soon as possible.

In summary, disaster and emergency management aims to prepare in advance for possible disasters and emergencies, to take measures for realization, and to get rid of losses in the least way and with the least damage.

In order to be successful in Disaster and Emergency Management, it is necessary to

get the support of the top manager, that is, the top manager. It provides this support by authorizing while planning and by ensuring the participation of other managers in these studies and in the form of instructions.

Keywords: Disaster, Emergency, Disaster and Emergency Management, Natural disasters , risk, crisis, Health and Safety

Definitions and Concepts Disaster

Before explaining disaster and emergency management, it is necessary to mention the concept of disaster. According to the definition made by the Turkish Language Association, disaster is the destruction caused by various natural events. As it can be understood from this definition, there is material and moral damage that it can cause. According to the definition made by the World Health Organization; Disaster is defined as “an event that causes damage, economic damage, loss of life and deterioration of health, affects the health of the community, and allows for sufficient extraordinary intervention outside the community and the area”.

The definition of disaster made by the Disaster and Emergency Management Presidency is “Disaster is a natural, technological (human-induced) event that causes physical, economic and social losses for the whole society or certain sections of the society, and stops or interrupts normal life and human activities.”

Disasters are events that can happen suddenly. Therefore, measuring the magnitude of the disaster; It is not possible to predict the loss of life, economic and cultural losses that may occur.

Disasters can be divided into 2 classes as Natural disasters and Technological disasters.

The source of most disasters is natural. Natural and Technological disasters are always and everywhere. We can give examples of earthquake, flood, heavy snowfall, avalanche, fire, forest fires.

Technological disasters, on the other hand, are disasters that are generally caused by technology and people. Technological disasters; We can give examples of CBRN, plane crashes, traffic accidents, terrorist incidents, acid rains and dam failures.

Common Characteristics of Disasters

- It can affect all living things,
- A hazard is sufficient for a disaster to occur,
- It can cause direct damage,
- The society’s response to disasters may be limited or insufficient,
- Nature and technological disasters affect all living things

Danger

We can say danger to physical events and phenomena that threaten life and living spaces and have the potential to damage property, property and the environment. If we define danger in another way; All events that cause physical, economic and social losses, which are nat-

ural, technological and human origin, are called hazards. According to the Occupational Health and Safety Law No. 6331, the definition of danger is; It is defined as “the potential for harm or damage that exists in the workplace or may come from outside, which may affect the employee or the workplace”.

Risk

According to the Occupational Health and Safety Law No. 6331, the definition of risk is; Risk is defined as “the possibility of loss, injury or other harmful result that may arise from hazards”. Risk in the Law No. 5902 on the Organization and Duties of the Disaster and Emergency Management Presidency; It defines it as the measure of the values to be lost according to the probability of danger in a given area. In short, we can say danger as the possibility of loss, injury or other harmful result. The concept of risk in disasters; We can define it as the losses that damage the infrastructure, nature and resources in urban areas and that may be in the economic structure.

We define it as a disaster if the expected risk occurs and there is great damage and loss as a result. It can be defined as an event if there is no or only a small amount of damage or loss as a result. In disaster and emergency management, the level of intervention should be evaluated in three ways as event, disaster, emergency and disaster management.

Crisis

We can say that it is a situation that occurs suddenly as a result of a sudden change in the internal and external environments of the enterprises or the workplace, which threatens the physical and economic situation, future and the employees of the business, and the necessary measures should be taken urgently.

Risk Management

As countries, institutions and individuals, we cannot predict what will happen in the future, so we need to make a risk assessment. Risk management is the decision-making and planning process to prevent or reduce the effects of situations that will occur in the future and have a situation that will affect our life, the region and our country.

Emergency

If we look at the definition of emergency in the regulation about emergencies in workplaces; It is defined as “events that require emergency response, struggle, first aid and evacuation such as fire, explosion, spread of dangerous chemical substances, natural disaster that may occur in the whole or in a part of the workplace”. We can define an emergency as events that interrupt the normal life and activities of a part of the society, namely certain segments.

Emergency Management

We can say that it is the process or process management that starts immediately after the occurrence of the emergency and ensures that all the needs of the affected communities are fulfilled in a timely and effective manner, as well as the disaster and emergency plans.

Disaster And Emergency Management

It is possible to say that disaster and emergency management is as old as human history. If we look at history, we see that people perform ceremonies, rituals and sacrifices in order to be helpless in the face of disasters and prevent disasters. Humanity has learned lessons from the disasters it has experienced, and they have always been in search of new methods for more effective fight and response to these disasters and how to reduce their effects.

The concept of disaster and emergency management is as follows: “If it is not possible to prevent disasters, that is, to minimize their damage, to respond to disasters in a timely, rapid and effective manner, to respond to disaster-affected living areas and to create much safer living spaces for the communities living here. disaster and emergency management.

These studies;

1. Pre-disaster studies
2. Disaster work
3. Post-disaster studies

can be planned and coordinated.

Pre-Disaster Studies

All technical, administrative and legal measures necessary for the living areas or the society to survive the events that may occur before the disaster with the least damage and the least physical loss should be determined and taken precautions by making a proactive study and risk analysis before the events happen. In addition, planning should be made in order to prevent incidents if they can be prevented, and if not possible, to carry out rescue, first aid and improvement works on time, quickly, efficiently and effectively. It is necessary to include it in every stage of development in order to prevent the damages and current risk caused by disasters and to ensure a sustainable development. It is necessary to provide awareness-raising trainings to all segments of the society for protection from harm and effective struggle.

Studies During Disaster

Communication, information and transportation facilities should be reviewed and provided, evacuation, search-rescue and first aid works should be started, living things should be removed from damaged habitats, structures in these living areas should be prevented from harming living things and precautions should be taken. Temporary shelters should be established and food, drink, fuel and clothing should be provided. In addition, precautions regarding safety and environmental health should be taken in all areas. In addition to these, studies should be carried out and precautions should be taken in order to prevent new hazards (such as explosion, contagious disease) that may occur after the disaster.

Post-Disaster Studies

It is necessary to carry out studies in order to save as many living things as possible and to ensure that they regain their health, to prevent living things from being harmed in the event of additional dangers after the disaster, and to start the fastest and most effective works for the society to return to their normal lives as soon as possible.

It may be said that some of the disasters cannot be completely prevented. However, what needs to be done here is to be informed in advance of the prevention of disasters, to warn, to minimize the damages that may occur after they occur, and to take precautions against the negativities they will cause.

When applying Disaster and Emergency Management, it is necessary to apply a comprehensive disaster management. The aim of implementing comprehensive disaster management is to prevent disasters, to minimize damages if we cannot prevent them, to reduce the loss of life, property and environment, to learn how to protect the society from dangers and all kinds of risks that may occur, and to be prepared for disasters.

The concept of Disaster and Emergency Management includes all the processes of organizing, analysis, planning, decision making and evaluation of the available opportunities for the purpose of being prepared for all kinds of danger, mitigation, intervention and improvement. So you need to think of it as a bit of disaster management work.

Today, we can say that Disaster and Emergency Management consists of 4 phases such as risk and harm reduction, preparedness, response and recovery.

Classical Disaster Management Cycle

1. Harm or Risk Reduction
2. Preparation
3. Intervention
4. Improvement

There are studies such as planning and risk reduction at every stage of my disaster management. These phases do not always follow each other, and they can overlap each other.

The phases of disaster management should be considered as a whole and applied effectively before, during and after the disaster.

To briefly describe these four phases of disaster management;

1. Harm or Risk Reduction

Studies and plans to minimize or eliminate risks arising from hazards and damage caused by disasters

2. Preparation

After risk reduction studies, planning, standards, instructions are created for new risks that may arise or unseen later risks.

Disaster And Emergency Management In The World

Today, we can say that natural disasters are increasing day by day and therefore natural disasters cause economic losses besides those who are affected by natural disasters and lose their lives. Almost all developed and developing countries are more or less affected by natural disasters. For this reason, disaster management awareness has begun to be addressed in order to eliminate post-disaster damages in the international arena. There are many international policies and official institutions and documents for disaster and emergency management, which is a point

where the world converges and Turkey also accepts and adopts.

The increasing economic, social and environmental losses after the disasters experienced all over the world and the great need for aid works after disasters have led to the questioning of the amount of aid given after disasters. With the help of scientific circles and international organizations, a new dimension has been brought to the disaster management policy and the targeted disaster management policies are not only prepared for emergencies and post-disaster aids, but also by making a risk assessment before the disaster, determining the risks and possible losses, and managing these risks in a systematic way. It has been a policy. This policy is one of the most important things to be done in order to minimize the damages caused by disasters and disaster and emergency management.

It is obvious that the methods to be applied by the institutions alone will not be sufficient when the impact area increases and the disaster exceeds the borders, as it is not known beforehand when and in what size disasters will occur. For this reason, it is an indispensable factor for national and international public institutions, non-governmental organizations, financial institutions and aid organizations with special status to use their power, experience, experience and opportunities together in disaster and emergency management.

International organizations such as the United Nations and the World Bank, of which our country is a member, have started to give priority to risk reduction studies for pre-disaster. In these studies, they started risk reduction studies for urban areas, low-income and uneducated communities as a priority. Restructuring and improvement phases after disasters were seen as opportunities, and development projects were prioritized at this stage.

The disaster and emergency management systems of the countries have been created as a result of the experience and knowledge gained by those countries from the previous disasters, and it has been studied that the disasters that may occur in the country gain more importance than the others and that more precautions should be taken.

We can say that disasters and emergencies negatively affect the development plans and investments of countries. For this reason, countries should include disaster and emergency management systems in their development plans.

International Institutions And Organizations Fighting Disaster

Today, disasters occurring in the world and in our country show us the point of vulnerability and dangers and how they leave us helpless. For this purpose, if precautions are not taken, it may harm many living things in the future, and we may even be faced with a decrease in damaged physical infrastructure and resources. These losses will damage our gains over the years. There are many organizations at the international level that work on reducing risks in disasters and emergencies and providing assistance to disaster-stricken countries.

United Nations (UN) - United Nation (UN)

It was established in 1945, after the Second World War, to ensure peace and security, to develop friendship relations between countries, to cooperate in solving social, economic and cultural problems.

United Nations Development Program (UNDP)

It was established in 1966 to work for the eradication of poverty and the reduction of exclusion and inequality. The United Nations Development Program works to reduce natural, environmental and technological hazards and risks, and to reduce social and economic poverty.

United Nations Office for the Coordination of Humanitarian Aid (UN OCHA)

It is the duty of the office to provide and coordinate international assistance and support to disasters and emergencies and was established in 1971 by the decision of the United Nations General Representative.

United Nations Disaster Assessment and Coordination System (UNDAC)

The United Nations Disaster Assessment and Coordination System (UNDAC) team is the system that takes action at the request of the affected country, consisting of disaster management experts of the United Nations Humanitarian Coordination Office (UN OCHA).

North Atlantic Pact (NATO)

It was established in 1949 in order to ensure that national studies in the field of civil protection are carried out in harmony and coordination.

International Civil Defense Organization (ICDO)

Exchange of experts among national civil defense units to both prevent disasters and respond when they occur.

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45001 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM STANDARD AND TRANSITION PROCESS

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ABSTRACT

Today, there are many reasons that impair the health of employees in workplaces. Due to these reasons, employees suffer from work accidents and occupational diseases and even become disabled as a result. It has been felt necessary to carry out occupational health and safety studies in order to prevent the employees from becoming disabled and sick in the workplaces. The main purpose of Occupational Health and Safety is to determine the dangers and risks that may harm the health of the employees in the working environment and to take precautions, to ensure that the employees work in a comfortable and safe environment, to ensure a complete physical and mental well-being and to maintain it at a desired level.

For this reason, in order to prevent or minimize work accidents and occupational diseases in our country, the Occupational Health and Safety Law No. 6331 was published in the Official Gazette on 30 June 2012 and put into force on 01 January 2013. Following the Occupational Health and Safety Law, regulations, directives and communiqués have been published. With the Occupational Health and Safety Law No. 6331, it is obligatory that all workplaces will benefit from occupational health and safety services, regardless of the number of employees, and that workplaces have to be divided into three hazard classes and require service according to the hazard class.

In addition, OHSAS 18001 Occupational Health and Safety Management System Standard was used to identify and manage the risks and hazards that might occur in the From the point of Occupational Health and Safety. However, although this standard includes many issues in terms of Occupational Health and Safety, since it is not an ISO standard, ISO standard was started to be developed instead and TS (ISO) 45001 Occupational Health and Safety Systems standard was published in 2018.

The purpose of implementing an Occupational Health and Safety management system in workplaces is to ensure that the workplace is safe and healthy and to protect employees from work accidents and occupational diseases that may occur while they are working, that is, to take preventive measures to prevent work accidents and occupational diseases, and to continuously improve Occupational Health and Safety performance. The Occupational Health and Safety management system will help a business meet legal and other requirements.

Keywords: Occupational Health, Emergency Management

TS (ISO) 45001 Occupational Health and Safety Standard

TS (ISO) 45001 Occupational Health and Safety Standard has the same structure as all other ISO standards. As an organization that has integrated TS (ISO) 14001 Environmental Management System into any of the ISO standards, it will easily adapt to the TS (ISO) 45001 Occupational Health and Safety Standard.

Before the TS (ISO) 45001 OHS systems standard was published, TS (OHSAS) 18001 was used to identify and manage risks and hazards that may occur in workplaces OHS. TS(OHSAS) 18001; organizational structure, risk assessment, exercises, communication, documentation and responsibilities. Although this standard contains many issues on OHS, since TS (OHSAS) 18001 is not an ISO standard, a problem is encountered such as complying with other standards such as TS (ISO) 9001 Quality Management System and TS (ISO) 14001 Environmental Management Systems. For this and many other reasons, TS (ISO) 45001 OHS systems were published as standard.

TS (ISO) 45001 OHS systems were standard, like all ISO standards, it was prepared according to the template prepared for ISO ANNEX SL, that is, for all management systems. In other words, it shows that it has the same structure as other ISO standards. This has shown us that the TS (ISO) 45001 OHS systems standard will be more easily integrated with other ISO standards. The new management systems used together with the TS (ISO) 45001 OHS systems standard ensure that only one person is held responsible for OHS and environmental issues, especially in small workplaces. However, the use of the “PUKÖ” model by the organizations using the TS (OHSAS) 18001 OHS Management system standard shows that my compliance with the TS (ISO) 45001 OHS systems standard will be much more comfortable. “PUKÖ” model;

Planning,

Application,

Check it

Take precaution

It is a constantly repeated process, which consists of the understanding that the OHS studies should start with planning first and that this problem is followed by the organizations to ensure continuous progress. This approach is in TS(OHSAS) 18001 and TS(ISO) 45001.

“PUKÖ” Model

The ISO 45001:2018 occupational health and safety management system approach applied in this section has been established on the Plan-Do-Check-Act (PUKÖ) approach.

“PUKÖ” model; approach is a process that is used by organizations to ensure continuous progress and is constantly renewed and updated. This process is applicable to a management system and every part of it.

a) Plan: OHS evaluates and determines the identified risks and emerging occupational health and safety opportunities and other risks and other opportunities, ensures to obtain results in accordance with the occupational health and safety policy of the enterprise, and in this way, ensures that the occupational health and safety targets and necessary processes are determined. ;

b) Application: It is the stage of implementing the processes as planned in the organization;

c) Check it: Monitors, analyzes, measures and reports the results of activities and processes in accordance with the occupational health and safety policy and occupational health and safety objectives of the organization;

d) Take precaution : It ensures to take the necessary measures to continuously improve and update the occupational health and safety performance in order to achieve the targeted results in the organization.

When we examine many titles in TS (OHSAS) 18001 in the TS (ISO) 45001 OHS systems standard, it draws attention that while there are four main titles in TS (OHSAS) 18001, there are ten main titles in TS (ISO) 45001. These titles are;

- Scope
- Binding Citations
- Terms and definitions
- Context of the Organization
- Leadership and Employee Engagement
- Planning
- Support
- Study
- Performance evaluation
- Improvement

The purpose of TS(OHSAS) 18001 Occupational Health and Safety Management System; “It aims to ensure that the organization or organization can control occupational health and safety risks and improve occupational health and safety performance.” The purpose of the TS(ISO) 45001 Occupational Health and Safety Management System includes “Providing improvements in the occupational health and safety performance of the organization or institution by taking precautionary measures, and the prevention of disabilities and occupational diseases”. It reveals that the TS(ISO) 45001 Occupational Health and Safety Management System pioneers the Proactive approach, that is, the preventive approach, and that the studies will be carried out according to the Proactive (Preventive) approach. In addition, TS(ISO) 45001 Occupational Health and Safety Management System focuses on risk management and development, TS(OHSAS) 18001 Occupational Health and Safety Management System has topics related to subcontractors, suppliers and contractors that are not included in TS(ISO) performance evaluations. We see that 45001 Occupational Health and Safety Management System takes place more frequently and new concepts such as organizational context, leadership and documented knowledge take place.

It is possible to say that the establishment and execution of the ISO 45001:2018 occupational health and safety management system in enterprises and the effectiveness of the management system and the achievement of the expected targets depend on some basic reasons;

- a) The support and leadership of the top management, the adoption of the occupational

health and safety issue, the senior management's awareness of the obligation and responsibility.

b) Top management should support the results that will emerge after the implementation of the ISO 45001:2018 occupational health and safety management system and develop, manage and promote a supportive organizational culture;

c) It should be ensured that the employees and employee representatives participate in the Occupational Health and Safety activities in the organization, consult and receive support.

d) Adopting OHS policies in line with the organization's policies, objectives, and policy and objectives,

e) Using and providing the necessary resources to ensure the continuation of occupational health and safety studies in the organization;

f) Effective studies should be carried out in the organization that will enable the identification of hazards, identification of risks, control of these risks and benefiting from occupational health and safety opportunities;

g) Ensuring occupational health and safety objectives in line with occupational health and safety policies, taking into account the hazards, risks and their analysis, as well as occupational health and safety opportunities, of the organization;

h) To continuously evaluate the performance of the ISO 45001:2018 occupational health and safety management system and monitor this process in order to develop and improve the occupational health and safety performance in the organization;

i) Ensuring compliance of the requirements of the ISO 45001:2018 occupational health and safety management system with the business processes of the organization;

J) Ensuring occupational health and safety objectives in line with occupational health and safety policies, taking into account the hazards, risks and their analysis, as well as occupational health and safety opportunities of the organization;

k) Compliance with legal and other requirements in the establishment.

l) Communication should be provided at the highest level;

Benefits Of Occupational Health and Safety Management System ISO (45001)

• Ensures the successful achievement of occupational health and safety policies and targets.

- Work accidents and occupational diseases are prevented or reduced.
- It helps to increase the awareness of health protection among employees.
- Contributes to the creation and development of a safety culture in employees.
- It gives the opportunity to improve in terms of technology.
- Cost is minimized and helps to provide control in this regard.
- Contributes to compliance with occupational health and safety legislation.
- It gives businesses competitive advantage.
- It ensures the protection and improvement of the image and reputation of the enterprise.

ISO 45001 Occupational Health and Safety Management System Standard Clauses

1 SCOPE

2 CITED STANDARDS

3 TERMS and DEFINITIONS

4 CONTEXT OF THE ORGANIZATION

4.1 Understanding the context of the organization

4.2 Understanding the needs and expectations of employees and other interested parties

4.3 Determining the scope of the OHSMS

4.4 OHS management system

5 LEADERSHIP

5.1 Leadership and commitment

5.2 Policy

5.3 Organizational roles, responsibilities and authorities

5.4 Employee engagement and consultation

6 PLANNING

6.1 Activities to identify risks and opportunities

6.2 Goals and planning to achieve them

7 SUPPORT

7.1 Resources

7.2 Qualification

7.3 Awareness

7.4 Communication

7.5 Documented information

8 OPERATIONS

8.1 Operational planning and control

8.1.1 General

8.1.2 Eliminating hazards and reducing OHS risks

8.1.3 Change management

8.1.4 Purchasing

8.1.4.1 General

8.1.4.2 Contractor

8.1.4.3 Outsourcing

8.2 Emergency preparedness and response

9 PERFORMANCE EVALUATION

9.1 Monitoring, measurement, analysis and evaluation

- 9.1.1 General
- 9.1.2 Evaluation of conformity
- 9.2 Internal audit
- 9.3 Management review
- 10 IMPROVEMENTS
- 10.1 General
- 10.2 Nonconformity and corrective action
- 10.3 Continuous improvement

Occupational Health and Safety Management System ISO (45001) standard is easy to implement in all businesses, regardless of size and type, and provides different geographical, cultural and social conditions. The success of the system can be ensured at all stages of the business by getting the support of the top management.

The Occupational Health and Safety Management System ISO (45001) makes a significant contribution to the establishment of a healthy and safe working environment for businesses and all people in the enterprises, apart from employees and employees, as well as continuous improvement of occupational health and safety studies in order to prevent or minimize work accidents and occupational diseases. will provide continuity and benefit in its direction.

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**OBLIGATIONS OF THE REGULATION ON EMERGENCIES TO PUBLIC
INSTITUTIONS**

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Abstract

Today, as a result of the rapid development of technology and the increase in natural disasters, the dangers and risks that can harm people, the OHS Law No. 6331 was enacted on 30.06.2012. Then, on 18.06.2013, a regulation on emergency situations in workplaces was issued. The purpose of the regulation on emergencies in workplaces is to regulate the procedures and principles regarding the preparation of emergency plans in the workplaces, the work to be done on prevention, protection, evacuation, firefighting, first aid and similar issues, and the safe management of these situations and the determination of the employees to be assigned in these matters. Since these studies in the regulation impose various responsibilities on employers and employees, it should be known what these responsibilities are and what to do. Employer obligations and employee obligations and responsibilities in the regulation on emergency situations in workplaces are discussed and evaluated in the 2nd part of the regulation. In the 3rd part of the regulation on emergencies at workplaces, preparation of the emergency plan, renewal of the emergency teams and their duties, informing the employees and trainings are explained. In the clause a of paragraph 1 of Article 4 of the regulation on emergency situations in workplaces, “emergency situations such as fire, explosion, spread of dangerous chemical substances, poisoning, epidemic disease, radioactive leakage, sabotage and natural disaster that may occur in the whole or part of the workplace or that may affect the workplace from outside. events that require immediate intervention are given as “. In its 7th article, it is stated that “Emergency plan is the determination of emergency situations for all workplaces starting from the design or establishment phase, taking preventive and limiting measures for their negative effects, determining the persons to be assigned, establishing emergency response and evacuation methods, documentation, drill and emergency plan. It is prepared by following the renewal stages”. As it can be understood from this definition, the emergency plan stages are given after this part of the article, that the emergency plan is a work that should be done for all workplaces without distinction of workplaces, even that workplaces should be made from the design and establishment stage.

In this study, the responsibilities brought by the regulation to employers and employees and the benefits of making an emergency plan are examined.

Keywords: Emergency, disaster and emergencies, occupational health and safety, eemergency plan, danger

Introduction

Disasters have been occurring since the existence of the world and cause damage to the environment according to their location and size. Elements necessary for life such as buildings and roads, which are necessary for people to live together, live and continue their lives, suffer greatly in the face of disasters. This situation causes both loss of life and property. A disaster is defined as a natural or human-induced event that causes physical, social and economic losses in the whole society or in a part of the society, stops or interrupts normal life, and exceeds the coping capacity of the said segment [1]. Some of the common natural disasters can be counted as earthquakes, avalanches, floods, landslides, storms, tornadoes, droughts, forest fires, lightning, desertification, rockfalls, epidemics and infectious diseases. Man-made disasters, on the other hand, are events that occur mostly due to carelessness and carelessness, and their consequences. To give an example of man-made disasters, social events, dam failures, facility explosions, global climate change, Chemical Biological Radiological and Nuclear (CBRN) events can be counted [2].

2. Emergencies at Workplaces

It is imperative that everyone do their part in order to be protected from natural or man-made disasters. In order to minimize the material and moral losses that may occur before such events occur, necessary infrastructure preparations should be made. For this purpose, AFAD, which is an institution that constantly responds to disasters and emergencies in our country, cannot be thought of as being sufficient alone to intervene in every emergency situation. For this reason, all workplaces should be prepared for such situations. For this purpose, “Regulation on Emergency Situations at Workplaces” was issued on 18 June 2013 in order for workplaces to be prepared for emergencies. The purpose of this regulation is to regulate the procedures and principles regarding the preparation of emergency plans in the workplaces, the work to be done on prevention, protection, evacuation, firefighting, first aid and similar issues, and the safe management of these situations and the determination of the employees to be assigned in these matters.

Emergency refers to events that require immediate intervention such as fire, explosion, spread of dangerous chemical substances, poisoning, epidemic disease, radioactive leakage, sabotage and natural disaster that may occur in the whole or part of the workplace or affect the workplace from the outside. In order to be able to intervene in such situations, every workplace must have an emergency plan. The emergency plan is the plan that includes the actions and actions to be taken in case of an emergency that may occur in the workplace and the actions for implementation.

Employer Responsibilities

The responsibilities of all employers, whether public or private, are as follows;

a) The employer determines possible emergencies by considering the working environment, materials used, work equipment and environmental conditions, emergencies that may occur and affect the employee and the working environment.

b) Makes the evacuation plan for emergencies in the workplace, determines escape routes, meeting places and creates emergency teams.

c) It should take preventive and restrictive measures against the negative effects that may occur in emergency situations.

d) Makes all necessary measurements and evaluations to be protected from the negative effects of emergencies.

e) Prepares emergency plans and ensures that all necessary drills are carried out to prepare employees for such situations.

Considering the size of the workplace and the special hazards it carries, the nature of the work performed, the number of employees and other persons in the workplace in order to combat emergencies; It assigns a sufficient number of employees who are equipped and trained in prevention, protection, evacuation, firefighting, first aid and similar issues and ensures that they are always present.

g) Makes the necessary arrangements to ensure communication with organizations outside the workplace in the fields of first aid, emergency medical intervention, rescue and fire fighting against injuries and diseases that may occur in possible events.

h) Decide to ensure that energy sources and dangerous systems are deactivated in emergency situations in a way that does not create negative situations and does not affect the protective systems.

i) Employees of the subcontractor and the employer, if any, with whom the temporary employment relationship is established, customers and visitors, and participants and other persons who are involved in collective activities such as meetings, seminars and training at the workplace, emergency situations, evacuation plan, escape routes, meeting places and emergency teams provides information about

j) It ensures that the personal protective equipment and response equipment to be used in emergency situations are suitable for the emergencies determined in the workplace and the duties of the emergency teams.

Responsibilities of specially assigned employees regarding emergencies do not relieve employers of their obligations on the subject.

Employee Responsibilities

a) The responsibilities of the employer in emergency situations and the obligations of the employees regarding the emergency are as follows;

b) To comply with the preventive and restrictive measures specified in the emergency plan.

c) When they encounter an emergency at the workplace that will endanger the health and safety of themselves and other people; to immediately notify the nearest supervisor, the person responsible for the emergency or the employee representative.

d) To comply with the instructions of the teams coming to the scene from the employer and the relevant organizations outside the workplace in order to eliminate the emergency.

e) To act in a way that does not endanger the life of himself and his colleagues during emergencies.

In cases where the employer is faced with a serious and imminent danger for the safety of the employees or other persons and cannot immediately notify their supervisor; In order to prevent undesirable results, it allows them to intervene within the framework of their knowledge and existing technical equipment. In such a situation, employees are not responsible for their intervention, unless they act negligently or carelessly.

Emergency Plan and Responsibilities

Emergency response and evacuation methods are determined by considering the negative effects that may come from nearby workplaces and the environment.

a) The employer is obliged to prepare or have an emergency plan prepared for the workplace. It ensures that the employer workplaces are prepared by following the stages of identifying emergencies, starting from the design or establishment phase, taking preventive and limiting measures for their negative effects, determining the persons to be assigned, establishing emergency response and evacuation methods, renewing the documentation, drill and emergency plan.

b) Emergencies that may occur in the workplace are prepared considering the results of the risk assessment and the spread, poisoning, epidemic, disease, sabotage and natural disasters caused by fire, explosion, dangerous chemical, biological, radioactive and nuclear materials that may occur in the workplace.

c) The employer works on the basis of collective protection in accordance with the principles of protection from risks. In case of emergencies, it ensures that emergency response methods such as warning, search, rescue, evacuation, communication, first aid and firefighting are determined and written down.

d) In the event of an emergency in the workplace, it indicates in the emergency plan the appropriate evacuation arrangements that can be followed in order to protect the employees from the negative effects of this situation so that they can move from their place to a safe place and gives the necessary instructions to the employees in advance.

e) Measures are taken to accompany the elderly, disabled, pregnant employees in the workplaces and the children in the nursery during the evacuation.

f) While establishing emergency response and evacuation methods, it considers the provisions of the Regulation on the Protection of Buildings from Fire, which was put into effect with the Council of Ministers Decision dated 27/11/2007 and numbered 2007/12937.

g) While establishing emergency response and evacuation methods, other people who are likely to be in the workplace, such as customers and visitors, are also taken into consideration.

Emergency Teams and Responsibilities

Employer; have to form extinguishing, rescue, protection and first aid teams in their workplaces. The responsibilities of these teams are as follows;

a) Extinguishing team: To intervene immediately in fires that may occur in the workplace, to control the fire if possible, to prevent the spread of the fire and to carry out extinguishing activities.

b) Rescue team: To carry out search and rescue works of employees, visitors and other people after an emergency in workplaces.

c) Protection team: To prevent panic and confusion that may arise due to an emergency, to ensure coordination between emergency teams, to carry out counting works, to provide information to the response teams of relevant national and local institutions when necessary.

d) First aid team: To perform the first aid interventions of the people who have been injured by the emergency.

For each of the extinguishing, rescue and protection teams, up to every 30 employees in the workplaces in the very dangerous class according to the danger class of the workplaces, up to every 40 employees in the workplaces in the dangerous class, up to every 50 employees in the workplaces in the less dangerous class, assigns at least one specially trained employee as support staff. If the number of employees is less than 10 people, it is sufficient to liaise with national and local institutions and organizations regarding emergencies, and to assign at least one specially equipped and specially trained employee as a support staff instead of all necessary teams.

The employer determines the responsible of all teams in order to ensure the necessary coordination between the teams in case of emergency. The list, which includes the name, surname, title, area of responsibility and contact information of the support staff assigned to the emergency teams, is hung visibly and at a height appropriate to the visibility level of the employees in the workplace. It reassigns the support staff assigned to the emergency teams in cases of leaving the workplace, relocation and similar situations.

Discussion and Conclusion

It is the employer's responsibility to ensure that the damage that may occur in disasters and emergencies does not occur or is minimized. All employers must comply with the relevant regulation. The employer should always make the workplace ready for emergencies by documenting the work he has done as specified in the regulation and by renewing it when necessary according to the hazard class of the workplace.

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EMERGENCY MATERIALS USED IN HIGHER EDUCATION INSTITUTIONS IN DISASTER AND EMERGENCY SITUATIONS

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Abstract

Today, the rapid increase in the world population, the rapid migration from the village to the city, cause the settlements to be crowded and therefore the buildings to be large and high rise. For this reason, the increase in the use of fossil fuels to meet the increasing energy demand causes global warming. Global warming, on the other hand, causes an increase in natural disasters such as floods, fires and landslides in our world. The increase in natural disasters causes more human, living and property losses. We have to be prepared for such situations so that there is no loss of life and property if possible. Increasing technological developments and the development of countries' awareness of taking precautions against disasters will ensure that the losses are minimal in possible disasters. Some of the main reasons for failure in disasters and emergencies that may occur are the lack of adequate and appropriate materials in search and rescue operations and/or the misuse of these in the hands of untrained people. In order to make the necessary interventions in disaster and emergency situations, it is necessary to have many materials such as tools, machinery and equipment in all workplaces and buildings, including government institutions. For this purpose, it is of great importance that such materials are supplied, maintained, periodically checked, and kept ready for use at all times and under all conditions. These types of materials may vary according to the situation of the place. For this reason, it is very important to provide the materials needed in any disaster and emergency by knowing what they are and to provide usage training.

The type of materials and equipment to be used in disasters and emergencies is very important in higher education institutions. In this study, the basic materials that should be kept in higher education institutions for disasters and emergencies were determined, and information was given about how these materials should be kept and how they should be used by competent and educated people.

Keywords: Emergency, disaster and emergencies, emergency supplies, occupational health and safety, hazard

Introduction

In this century, in which technological developments increase at a dizzying pace, the climate change caused by the irregular migration from the village to the city, the rapid increase in the number of factories, and the global warming, causes an increase in various natural disasters in the world. Due to disasters, great losses occur both materially and morally [1]. Although the financial losses, most of which are caused by major disasters, cause great damage to the country's economy, it is an important issue that should be considered that there are both psychological and sociological traumas in the people who experienced this event. Every country, every institution, every person has to do their part against these disasters that cause both economic and social problems.

In relation to what should be done in disasters and emergencies in our country, the rules that employers and employees must comply with have been established in order to spread this awareness and take the necessary measures. It is imperative that the necessary preparations are made correctly in order to avoid inadequate and ineffective response in disaster and emergency rescue efforts.

Material and Method

Interventions to be made after disasters and emergencies will not reduce the damage that may occur. For this reason, various measures should be taken and preparations should be made, both personally, as an institution and as a state, in order to overcome the damage with the least amount of damage. The works to be done before the disaster or emergency will ensure that the losses that may occur will be overcome with the least damage. For this reason, it is very important to plan and determine the responsible and what will be done beforehand [2].

In our country, the Disaster and Emergency Management Directorate (AFAD) provides cooperation between all institutions and organizations of the country for the planning, guidance, support, coordination and effective implementation of the necessary activities in order to reduce disaster prevention and damage, to respond to disasters and to complete the improvement works after the disaster quickly, and to take into account the rational use of resources in this field, as a business-oriented, flexible and dynamic institution based on interdisciplinary work in its activities, it tries to fulfill its duty properly [3].

In order to prepare for disasters and emergencies, each institution should plan according to the current situation of hazards and risks. In this planning, it is very important that the workplaces are prepared. It is necessary for the top management to support the planning made in the workplaces. Participation and training of employees should be ensured with the support of senior management. Not only in disaster and emergency rescue work, but also in the actions to be taken after the end of the rescue work, shelter needs of living things, eating and drinking problems, health problems and evacuation should be studied at this planning stage [4].

When the risk assessments made in OHS studies in Higher Education institutions are examined, as in all public and private institutions, it is necessary to consider the risk assessment studies to determine the materials to be used in this disaster and emergency, as well as the necessary precautions, considering that there are different hazards and risks.

Findings

Disaster and emergency planning bring along the management of a process along with risk assessment. In order to get the desired result, following certain steps and applying the necessary steps are essential for success. A good team of experts from different fields is needed to prepare and develop the plan. The size of the team is also related to the size, problems and resources of the institution or related field and region [5].

While it is very important to provide training on how to act in case of disasters and emergencies, it is also very important what materials to be used and how to use them in order for life to continue. Planning should be done with an integrated disaster management approach [4].

Materials that may be required in case of any disaster or emergency in higher education institutions can be classified as follows. The point to be considered here is the calculation of the amount by considering how many people can be found in that workplace, and the given material list is given as an example of basic materials. This list can be diversified according to the risk analysis made.

1. Required 72-hour materials for Temporary Housing:
 - a. Drinking and using water
 - b. Food
 - c. Ingredients for eating and drinking
 - d. Hygiene and cleaning supplies
 - e. Lime and bleach
 - f. Table, chair
 - g. Blankets, carpet, etc.
 - h. Heating device
 - i. Radio
 - j. Lantern, mobile cordless lamp
 - k. First aid kit
 - l. Other

2. Emergency evacuation supplies

- m.** Evacuation chairs
- n.** Projector
- o.** Portable lighting system (with redundant)
- p.** Various plumbing removal, installation, etc. tools necessary for drinking
- q.** Personal protective equipment that may be required (helmet, hard hat, mask, gloves)
- r.** First aid supplies
- s.** Other

3. Materials of the disaster container

- t.** Lifting jack
- u.** Basic plumbing materials such as saws, pipe wrench
- v.** Megaphone
- w.** Electrical cables and tools
- x.** Materials for personal protective equipment
- y.** Fire extinguishing tubes
- z.** Crusher drilling equipment
- aa.** Generator
- ab.** Kitchen stuff
- ac.** Other

4. Firefighting materials

- ad.** Firefighter clothes and equipment
- ae.** Steel tube breathing kit
- af.** Full face mask with CO2 protection

ag. Fire blanket

ah. Lantern, megaphone

ai. Equipment for fire responses such as axes, ropes, hooks

aj. First aid kit

ak. Other

5. Rescue team supplies

al. Personal protective equipment

am. Tools and equipment for cutting, disassembly, crushing and repairing

an. Fire extinguishing tools and equipment

ao. Lighting materials

ap. Generator

aq. Other

6. Medical team supplies

ar. Basic health equipment

as. ECG device

at. Wheelchair

au. First aid supplies

av. Refrigerator

aw. Waste bin

ax. Basic emergency medicines, vaccines and anti-serums that are required to be kept in the Regulation on Private Health Institutions with Outpatient Diagnosis and Treatment published in the Official Gazette dated 15/2/2008 and numbered 26788.

ay. Other

- 7. Security team supplies
 - az.** Warning and safety strip
 - ba.** Warning Signs
 - bb.** Materials used to provide security such as cops and clamps
 - bc.** Other

- 8. Management and communication supplies
 - bd.** Telephone
 - be.** Television
 - bf.** Computer
 - bg.** Internet
 - bh.** Office supplies
 - bi.** Stationery
 - bj.** Other

- 9. Logistics team supplies
 - bk.** Tent
 - bl.** Blanket
 - bm.** Mat
 - bn.** Generator
 - bo.** Electrical supplies
 - bp.** Plumbing materials
 - bq.** Disassembly, fitting, crushing, etc. materials
 - br.** Water treatment tablets
 - bs.** Kitchen stuff
 - bt.** Heating or cooling materials

bu. Other

10. Technical team materials

bv. All technical requirements and equipment that may be required in a building

bw. Other

11. Materials to be used in shelters

bx. First aid supplies

by. Fire Extinguishing materials

bz. Cleaning supplies

ca. Foodstuffs

cb. The value materials needed by shelter supervisors and unit supervisors

cc. Materials prepared in accordance with the regulations regarding shelters

Results and Discussion

Higher education institutions, which have an important place in public institutions, should lead and guide all institutions in this regard as in every field. It should fulfill the necessary duties regarding disasters and emergencies and ensure the necessary coordination with other institutions. For this purpose, higher education institutions;

1. What to do in case of an emergency should be determined and the necessary training should be given to the employees.

2. Those responsible should be determined, periodic meetings should be held and the necessary decisions should be taken by determining the current situation.

3. It should be ensured that the materials required in emergency situations are determined and purchased.

4. Continuous periodic control of these materials should be ensured and controlled continuously.

5. The materials that need to be renewed should be renewed.

6. Preparations should be made as if there will be a disaster at any moment.

7. Reminder seminars and news should be made for the development of disaster awareness, and minds should be prepared.

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**EMERGENCY AND DISASTER INTERPRETERS IN TURKEY (ARÇ) AS FACILITATORS AND COMMUNICATION AGENTS IN A DISASTER ENVIRONMENT:
EU-MODEX 2021 TURKEY EXAMPLE**

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Abstract

The ARÇ Team (Emergency and Disaster Interpreters) was started after the great earthquake of 1999 in Turkey, composed of different people from diverse backgrounds brought together and created an almost homogeneous group of agents which exists for a single purpose; providing interpreting services for foreign rescue and relief teams and facilitating the communication between diverse cultures and settings. This paper focuses on this communication agents from a communication perspective within the scope of latest EU-MODEX 2021 Tekirdağ Exercise under the light of the international communication environment they create as the ARÇ Team. Emergency and Disaster Interpreters (ARÇ) as a Turkish Model aimed to be presented as an example of linguistic mediation and cultural facilitation in multilingual working environments vulnerable to disasters.

Keywords: emergency and disaster interpreters, communication agents, linguistic meditation, cultural facilitation, ARÇ

Introduction

The interpreter as a social agent, on the other hand, regardless of his/her working environment and context, acts as a mediator between different ideas and interests. The ARÇ Team (Emergency and Disaster Interpreters), which was initiated after the great earthquake of 1999 in Turkey function as a social agent, regardless of his/her working environment and context, acts as a communication agent and facilitator between different ideas and interests. Mostly founded by academicians, interpreters, and volunteers, the ARÇ Team provides interpreting services for foreign rescue and relief teams under the protocol of Translation Association and Ministry of Interior Affairs-Disaster and Management Authority known as AFAD. This new set of dispositions they gain as members of this team somehow turns them into a more organized group of social agents as both communicators and facilitators. This paper, within the scientific frame of the relevant litera-

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ture, describes the foundation, organization, training, accomplishments and weaknesses and future actions of this endeavor in its tenth anniversary, with an aim to be an example for the multilingual countries vulnerable to disasters (Doğan & Kahraman, 2011).

Emergency and Disaster Interpreting in Turkey

After 1999 earthquakes, Translation and Interpretation Department at Istanbul University in Turkey launched training courses for the interpreters volunteering to provide services to the foreign search and rescue (SAR) teams aiming to facilitate communication during SAR operations and humanitarian aid actions is unique to Turkey. After being founded under the name of ARÇ (Afette Rehber Çevirmenler) and translated as IAD in the related literature during the first years of practice has been transformed into a broader term as Emergency and Disaster Interpreters (Bulut and Kurultay 2001; Bulut 2002; Bulut and Kahraman 2003; Dogan 2006).

ARÇ interpreters are intermediaries between local people and authorities, and foreign search and rescue (SAR), relief and logistic support workers. As a subfield of community interpreting (CI) situations, the foreign language speakers involved are service providers from abroad and disaster operations are not only limited within a certain scope of time and place but also take place before, during and after disaster relief and emergency response operations which makes ARÇ as a natural communication partner of a national and international emergency and disaster plan.

With these ideas and experiences in mind, an initiative of volunteers from Translation and Interpretation Department at Istanbul University and Translation and Interpreting Association Turkey. It was designed as a triangular model of emergency response collaboration between the state, civil society, and universities. Based on a protocol signed in 2001 with the national disaster and emergency management authority (AFAD)⁹, ARÇ has a structural basis for taking further professionalization measures when necessary. Academic, non-governmental organization and state based civil defence partnership was established for the training of interpreters to act during emergency and disaster situations with an institutionalized structure (Bulut and Kurultay 2001: 251).

ARÇ training has aimed to provide interpreting and translation services for SAR teams in before and after their arrival on base of operation and during SAR operations on site, in flow of international communication, distribution of the humanitarian aid supplies and for the foreign medical teams and health services.

The trainings started with the students from Istanbul University, Translation Studies Department, then Hacettepe University, Translation and Interpretation Department, Dokuz Eylül University in Izmir, Onsekiz Mart University in Canakkale, Sakarya University in Sakarya, and approximately 400 volunteers were trained altogether by an ARC Training Programme composed of 100 hours of training modules, 30 hours of SAR drills, 10 hours of first aid and covering topics such as geomorphology, architecture, disaster management, psychology, communication, wireless

⁹ The General Directorate of Civil Defense under the Ministry of Interior, the General Directorate of Disaster Affairs of the Ministry of Public Works and Housing, and the General Directorate of Emergency Management of Turkey under the Prime Minister's Office were closed and the Disaster and Emergency Management Directorate of the Prime Ministry (AFAD) was established with the law no. 5902 issued in 2009 and the powers and responsibilities were gathered under the same structure.

radio communication, international and national organizations, community interpreting, terminology (Doğan, 2012). ARÇ has also Volunteers' Seminar, in which the voluntary interpreters have a one-day training, becoming familiar about the general information about the training modules of Basic ARC Programme (Bulut and Kurultay 2001; Bulut 2002; Bulut and Kahraman 2003; Dogan 2006; Doğan 2016).

Since than ARÇ Teams have taken active roles in disaster preparation trainings, monitored the operations such as; (Iran-Bam Earthquake (2003), Banda Aceh Tsunami (2004), Pakistan Earthquake (2005), Greece Forest Fire (2007), France National Simulated Operation (2008), Greece K9 Trainings (2007- 2008), Japanese Earthquake (2011), Libyan Rescue Operations (2011), followed and translated international sources and with shared these with local and international institutions (Doğan, 2016).

Within the scope of our collaborative actions with AFAD, EU-MODEX 2021 Tekirdağ Exercise has been a wonderful opportunity to analyze the dispositions of the members of ARÇ team under the light of the international communication environment. This new set of dispositions they gain as members of this team somehow turns them into a more organized group of social agents as both communicators and facilitators. Their role as facilitators, has not only been assessed between life and death in an emergency and disaster situation, but also between different cultures and systems. Emergency and Disaster Interpreters (ARÇ) as a Turkish Model aim to present an example of linguistic mediation and cultural facilitation in multilingual working environments such as EU MODEX.

EU MODEX 2021

The Module Exercises (MODEX) are financed by the Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO) and are part of an exercise series within the EU Civil Protection Mechanism. The main exercise goals for the participants are to train self-sufficiency, interoperability, procedures, and coordination as well as to use the exercise as a learning opportunity¹⁰.

EU MODEX Disaster Exercise 2021 was held in Tekirdağ between 10-14 November, 2021 with the participation of 1.715 personnel from 7 countries including Turkey, France, Italy, Spain, Austria, Greece and Belgium. Turkey hosted Tekirdağ MODEX under the coordination of the Disaster and Emergency Management Authority (AFAD)¹¹. The scenario of the exercise was to respond to an earthquake with 7.4 magnitude in Tekirdağ.

ARÇ Team

ARÇ joined the exercise with the participation of twenty-one voluntary translators and interpreters from Istanbul, Ankara, Sakarya, Erzurum and London. ARÇ members worked onsite and off-site in shifts and provided translation and interpreting services in four languages which were Turkish, English, German and French. Basic ARÇ Training Programme was given for the new ARÇ volunteers to adapt and act more efficiently during the exercise.

ARÇ team has participated MODEX 2021, in order to examine their strengths and

¹⁰ Source: EU MODEX, www.eu-modex.eu

¹¹ Source: AFAD, en.afad.gov.tr

weaknesses, improve their coordination and act as a team, establish new relationships with fellow institutions and civil societies and gain an international experience for a real-life emergency and disaster situation.

Positioning

ARÇ team has not only served as translators and interpreters but also linguistic facilitators and cultural mediators in many areas during MODEX Exercise. The team members worked in various positions in shifts to gain experience in different emergency and disaster environments and situations. Every position required its own unique field of expertise and terminology as well as managing, facilitating and mediating skills. Functioning with such competences, ARÇ team has served for the following positions and teams;

- a. Base of Operation (BoO)
- b. Make-up
- c. Urban Search and Rescue Operations
- d. Emergency Medical Teams (EMT)
- e. ExCon

Base of Operation (BoO)

ARÇ Team took an active role at Base of Operation where initial communication was playing a crucial role as the task forces were arriving, settling and departure, getting organized during the exercise. ARÇ provided both translation and interpreting services among local and foreign teams and ensure effective communication and smooth transition between each task. Providing remote interpreting via telephone, assisting, and guiding foreign teams to cope with cultural issues on site and outside the exercise site, during the arrival and departure process, communicating between different institutions and organizations are a few of the actions held by ARÇ team members.

In addition to provided translation and interpreting services, ARÇ team had also operated, assessed, and evaluated their own operational structure; distribution of tasks, organization of shift schedule and reporting to ARÇ coordination about their position and current situation at the Base of Operation. The flow information between BoO and other operational sites had played a crucial role in coordination of activities and allocation of task forces efficiently.

Furthermore, throughout the exercise ARÇ had the opportunity of observing and experiencing nonflowing actions, positions and operations and actively involved in giving feedback and contributed post operational briefings of the exercise among the related bodies (such as AFAD, UMKE, AKUT, International Teams).

Make-up

During the MODEX exercise paramedic trainees volunteered for role playing as casualties in search and rescue, and medical treatment operations. They were being assigned for some certain roles by EU Civil Protection and a special casualty makeup was applied according to assigned makeup description. The first ARÇ team worked in Tekirdağ Public Hospital with Turkish and Austrian teams to prepare casualties using fake injury makeup. ARÇ team interpreted the role cards for Turkish make up teams and made sure that the makeup was applied in accordance with

the given makeup description. The team also took a part in managing and directing the group of volunteers during the entire process worked in coordination with Italian EU Delegates. Interpreting at make-up environment requires not only translation and interpreting skills such as medical terminology and cultural knowledge but also social skills such as effective communication and coordination of which ARÇ members are trained for (Kahraman, 2003).

Make-up stage is one of the locations where cultural differences are deeply felt and causes communication problems among international and local teams since there is no specific action plan or procedure to follow. At this stage, ARÇ emerged as cultural mediator as ARÇ Response Plan suggests;

Interpreters who know they are supposed to offer a social and psychological response to disaster and the cultural aspects involved will act as mediating agents who can be successful in avoiding misunderstandings; they will thus be able to differentiate individual responses from cultural ones and set up a more realistic framework for relations between the team, the locals and others. (Bulut & Kurultay, 2001)

Urban Search and Rescue (USAR) Operations

ARÇ Code of Ethics states that, ARÇ is a voluntary organization. Its objective is to provide interpreting services for foreign rescue teams at times of disaster and the range of ARÇ services varies in accordance with the scope of the activities of the foreign rescue teams. (Bulut & Kurultay, 2001) It can therefore be stated that search and rescue procedures are prior to ARÇ services that is why it is the vital part of the exercise.

Unlike other ARÇ teams at Make-up site or EMTs, interpreting services were provided during both day and night shift by ARÇ members. The casualties were sent to disaster site to be searched and rescued.

ARÇ team worked with urban search and rescue (USAR) teams during the search and rescue operations providing interpreting services among the local and international USAR teams and casualties. ARÇ team worked between local teams and foreign teams in shifts day and nighttime as linguistic facilitators providing effective communication and instant information exchange thanks to their competence regarding search and rescue background and terminological knowledge. Besides their language competency they have also acted as communication actors between, BoO, Make-Up, EMT and SAR operation site by delivering the arrival- departure of teams and casualties.

Emergency Medical Teams (EMT)

Rescued casualties were sent to Emergency Medical Teams to be examined. The third ARÇ team provided interpreting services between casualties and international EMT volunteers during the whole treatment process including the first triage where the patients were accepted and discharged from the EMT tents.

Interpreting services were provided during the briefing between Turkish paramedics and Spanish EMTs when casualties were first transferred to the EMTs tents and then between the casualties and EMT volunteers during the triage, treatment, and discharge processes. In addition to serving as interpreters in examination and treatment stages, also facilitated the information flow and casualty management in the tents during both planned scenarios and unexpected events.

As an example, from a scenario; two ARÇ members were actively involved in disarming process of an armed individual suddenly entering the EMT tent. This has shown the fact that just like the necessity of calmness in a real-life situation, some unexpected events where professionalism is required may also occur during exercises.

Another good example to be given is about a casualty volunteer who was overwhelmed because of the intense EMT environment and started to yell and cry. ARÇ members helped the EMT to calm down the overwhelmed volunteer and manage the whole situation without the rest of the team or volunteers getting affected and exercise being interrupted.

EMT tents are challenging and hectic emergency environments demanding rapid response, decision making, and practical skills and competencies. ARÇ members played a significant role working in collaboration with EMT Teams, created solutions for the linguistic and cultural barriers between casualties and EMT Teams and ensured a calm and controlled working environment during the exercise (Dogan, Bulut, Kahraman 2005).

ARÇ as cultural mediators; emergency and disaster situations are times when emotional and instinctive stimulations take places which are closely related to cultural acquisitions. When culture is involved, it is hard to manage dynamics of an environment especially in times of emergency and disaster. ARÇ in this regard, act as an expert of both language and the culture and mediate the situation (Bulut & Kahraman, 2003).

ExCon

ARÇ were actively involved at ExCon site as the main operational command center of the exercise where the course of proceeding was controlled and analyzed by executives. ExCon was not involved in the initial plan of action for EU MODEX 2021. However due to an instant need for interpretation emerged at the beginning of the operations ARÇ took an immediate action and provided the required service by rearranging the positioning and shifts among the ARÇ members. ExCon experience was crucial to observe and experience the relationships between different stakeholders in case of an emergency and disaster situation, since it was a communication environment not only involving EU- Modex Representatives and AFAD but also the local governmental authorities, press members and all information flow related bodies.

In conclusion to say, ExCon has not only acted as the brain of the operation but also been a main communication hub for the flow of the actions and relations which made ARÇ members as one of the key components to facilitate and guide the network of operations both on site and among the institutions.

Conclusion

Acting among different teams such as USAR, EMT, and coordinators, ARÇ initiative has been an important stakeholder serving not only as interpreters but also as facilitators during the MODEX 2021 exercise by enhancing smooth transition between each step starting from BoO to Make-up Site, USAR Operation Site and EMTs. ARÇ was able to maintain flow of information through translation and interpreting regardless of time and place in accordance with changing dynamics during the exercise. By being trained for emergency and disaster operations, ARÇ members were able to operate as facilitators and took initiatives which pave the way for a better, calm, and

controlled management of the working environment.

As a result, the MODEX 2021 exercise was fruitful for ARÇ to gain new experiences, practice and improve translation and interpreting skills. EU MODEX 2021 has been a valuable validation for the presence of ARÇ Team in order to operate more effectively with the help of linguistic mediators and cultural facilitators in times of emergency and disasters.

Apart from the members' language and interpreting skills, their role as facilitators, not only between life and death in emergency and disaster situations, but between different cultures and systems, comes to the fore as ARÇ members. Emergency and Disaster Interpreters as a Turkish Model aimed to be presented as a unique example of linguistic mediation and cultural facilitation in multilingual working environments vulnerable to disasters (Kurultay & Bulut, 2012).

It is noticeably clear from given examples that ARÇ served as both linguistic facilitators and cultural mediators during EU MODEX 2021 besides translation and interpreting services. Cultural problems occur in communication, operation and management can hinder the disaster response to be delivered and casualties may suffer consequently.

For this not to happen, ARÇ members facilitated cultural adjustment and provided effective solutions as cultural mediators between local and international teams if required. Soothing the situational and intense environment of the exercise, ARÇ operated effectively as cultural mediators during EU MODEX 2021.

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**FORENSIC MEDICINE APPLICATIONS IN DISASTER AND EMERGENCY
SITUATIONS**

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ABSTRACT

The most beautiful gift given to man is the “Right to live”, which is the precondition of all rights in the context of human rights. The result called “Death”, which occurs with the termination of this right, brings positive duties and obligations to real persons and organizations, especially the legal entity called the State.

In natural, technological or man-made disasters and emergencies that disrupt social life by causing material and moral damages for the whole or certain segments of the society, the most important thing is to determine the identities of the deceased and to perform religious rituals according to their belief systems, as well as the search and rescue of the victims of disasters, and the provision of medical services.

Depending on the severity of the disaster, the management of the disaster crisis requires a great national and international organization before and after the disaster. In order for this process to come to a successful conclusion, the undoubted identification of the victims of the disaster within the scope of the necessary coordination is an important problem both in legal, religious and humanitarian terms.

In this article, basic information about the identification of disasters victims will be mentioned and evaluation will be made on the examples of the Council of Forensic Medicine, which has an important knowledge, experience and memory in Türkiye.

Key words: Identification, disaster, forensic medicine

Introduction

This social solidarity requires scientific preparation in the prevention of human or natural hazards, as well as in dealing with the danger when it arises. The aim of scientific preparation is, of course, primarily to prevent human or natural disasters, and to minimize the loss of life and property in case of danger.

Providing social solidarity in disasters such as earthquakes, tsunamies, floods, and fires is the duty of the state, which has a sociological organization. In severe disasters, sometimes even the power of a state may not be enough to solve all the problems. That is why international solidarity is an important fact. The most important stage of this solidarity is to determine the “management” procedures and principles to be shown in possible disasters.

Conscious of the minimizing the loss of life and property in disasters is the main objective, it should not be forgotten that it is a humanitarian duty to deliver the corpses of those who died in disasters to their relatives. A prerequisite for the bodies to be handed over to their relatives is the unequivocal identification of the victims of the disaster.

The death of a person is very important in the rule of law. Death, which means the termination of the right to life, as a prerequisite for all rights, is a physiological condition, but it also has legal consequences. The rule of law seeks answers to the questions of who died and why in a death case. For this reason, determining the identity of the deceased contributes to the realization of the legal consequences that will arise on the person after death.

Undoubtedly, it is much more difficult to identify deaths in disasters based on both the nature of the disaster and the number of deaths. For this reason, in order to standardize the identification of disaster victims all over the World, Interpol published a guide on the identification victims for the first time in 1984. The Disaster Victim Identification (DVI) Guide provides guidelines for use by Interpol Member States in the identification of disaster victims.

On the other hand, the basic principles related to the subject are also discussed in the manual named “Management of Dead Bodies after Disasters: A Field Manual for First Responders” prepared by the Pan American Health Organization, the World Health Organization, The International Committee of the Red Cross and the International Federation of Red Cross and Red Crescent Societies in 2006.

Conscious that the information in both guidelines is advisory and that identification can not replace scientific studies conducted by forensic medicine specialists, it should not be forgotten that the guideline information will contribute to the correct applications to be made on dead bodies by people other than the forensic medicine Specialist working at the disaster site after the disaster.

In disasters, it is important to record the crime scene information before transferring the corpses from the scene to the predetermined warehouses, and to use coffins and body bags for the transport of the corpses. Rapid retrieval is a priority because it also aids to reduce the psychological burden on survivors.

Since decomposition will progress rapidly after death especially in hot weather, it is very important to collect the corpses in cold storage. Cold storage slows the rate of decomposition and preserves the body for identification. Refrigeration between 2°C and 4°C is the best option.

Photographs of the corpse taken at the crime scene and in cold storage are the beginning of the identification. However, it can be misleading. Therefore, great care must be taken.

Methods of identification used in cases of disasters must be scientifically sound, reliable, applicable under field conditions and capable of being implemented within reasonable period of time.

In order to determine the identification of disaster victim without any doubt, if necessary autopsy should be performed and fingerprint, dental, and DNA analyzes should be made. These analyzes are named as “Primary methods of identification”.

Fingerprint has a special importance in these basic analyzes. Because, firstly fingerprint is unique to every person. Another feature of fingerprint is that the fingerprint formed in the mother’s womb is the same after birth, regardless of any factors. And also, fingerprint can be classified.

DNA (Deoxyribo Nucleic Acid) used in identification is a biological material that is a biochemical key that distinguishes individuals from other people, except identical twins, and reveals their uniqueness, and transmits hereditary characteristics from generation to generation. Due to DNA analysis can be performed on severely decomposed remains, DNA testing is the best in disasters.

On the other hand, the teeth in the mouth are an important biological material for identification, especially since they are resistant to decay. Medical interventions done by dentists on the teeth during the life of person also give very useful information on identification of disaster victims.

In order for the post-mortem collected evidence and information to be able to successfully identify disaster victims, it is necessary to obtain ante-mortem personal biological data of these persons in a reasonable time. In summary, the more accurate ante-mortem data is provided to forensic medicine specialists in a timely manner, the more successful the identification of disaster victims will be.

Black Sea Region Flood Disaster Experience on 11 August, in 2021 in Türkiye.

In the flood disaster that occurred after heavy rain in the Black Sea Region on August 11, 2021, the bodies of a total 82 people, 71 in Kastamonu, 10 in Sinop and 6 in Bartın, were found.

Since the beginning of the flood disaster, an emergency meeting was held by the Council of Forensic Medicine. After DVI teams were formed for intervention, they were sent to the region and the event was tried to be followed up.

During the studies, the personnel of the Biology and Morgue Specialization departments performed the classification and DNA analysis of the biological materials sent from the disaster area.

When the events during the flood disaster were examined, some issues came to the fore in the process of identification of the disaster victims.

1- Forensic units, law enforcement officers, municipal officials, forensic medicine workers, health workers and auxiliary personnel located in the areas where the flood disaster occurred and transferred there tried to carry out a joint work.

2- There was a lack of coordination between the prosecutor, law enforcement officers and health workers at the crime scenes from time to time.

3- The roads and bridges destroyed during the disaster caused difficulties in transportation of personnel, necessary equipment and necessities to the scene.

4- Particularly in the identification process of the disaster victims, there were difficulties in the transportation of the bodies from the scene to the places where the death examination was carried out.

5- In the recording and coding processes applied to corpses, different practices occurred due to the personnel changing.

6- Although the time passed since the disaster beginning made it difficult to identify the bodies with physical examination, Corpses were handed over to their families or relatives by the prosecutors only by physical examination. This situations caused errors in the identification of some victims at the first moment, and therefore, it was necessary to repeat the procedures and analyzes.

7- In order for the victims reported as missing to be identified by DNA, the kinship relationship between the missing person and the people who searched for her / him must be known correctly. The lack of this information or the samples taken from the people who have no place in DNA comparison have revealed the necessity of delay in DNA analysis and re-evaluation.

8- Funerals must be stored in a suitable environment. Especially in summer, it is important that cold storage must be sufficient.

It is fact that, the Council of Forensic Medicine has a lot of experience in disaster victim identification in previous disasters. In addition, it has become very experienced personnel and equipment park in this regard.

With the ALIS(Forensic Laboratory Operating System) used by the Biology Specialization Departments under the roof of the Council of Forensic Medicine in Türkiye, both time was saved in flood disaster and the expectations of the families were met in a short time, providing the opportunity for social calm and relaxation.

Despite the successful result obtained with DNA analysis in the identification of victims in Black Sea Region flood disaster, it should be noted that infrastructure studies should be accelerated in order to ensure more use of fingerprint and dental analysis in disaster victim identification.

As a result,

Conscious that the prevention of disasters is the main objective,

Conscious that disasters will occur and cause deaths,

Conscious that the identification of the deceased in the context of the rule of law is a requirement of respect for human dignity,

Conscious that the deceased deserves ceremonies in accordance with her / his faith,

Conscious that the fulfillment of the legal consequences arising from the death of the person,

The highest efforts to identify victims of disasters should be made nationally and internationally.

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SUMMARIES



**ATATÜRK
ÜNİVERSİTESİ
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ATATURK
UNIVERSITY
PUBLICATIONS**

**COST-SENSITIVE AFTERSHOCK PREDICTION MODEL: CASE STUDY IN
TURKEY**

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ABSTRACT

Most major earthquakes are followed by additional earthquakes, called aftershocks, which make up an aftershock sequence. While most aftershocks are smaller than the mainshock, they can still be damaging or deadly. Aftershock predictions are critical in influencing decisions on earthquake preparedness and in reducing seismic exposure in both long-term planning situations and response. The study aims to determine the remarkable aftershocks that may occur after the major earthquakes. According to Kandilli Observatory and Disaster and Emergency Management Presidency, 37 major earthquakes have occurred in Turkey since 1990. After these earthquakes, 2466 aftershocks have occurred with different magnitudes. Among these, it is important to predict, as those with a magnitude greater than 4.0 because, according to The Modified Mercalli intensity scale, earthquakes with a magnitude less than 4.0 magnitude don't cause damage to structures and aren't even felt by most people. According to the data set used in the study, only %27 of aftershocks are greater than 4.0 magnitude. To handle with a class imbalance of the dataset, a cost-sensitive classification algorithm and multi-objective evolutionary algorithm were applied. The objectives of our problem are to minimize the number of rules and costs and to increase accuracy. It is much more costly to incorrectly predict aftershocks with a magnitude greater than 4.0 than to incorrectly predict aftershocks with a magnitude of less than 4.0. Algorithms were compared and the cost-sensitive algorithm remarkably reduced the cost of misclassification and 8 rules were obtained to identify the classes. The results will help disaster decision support systems.

Keywords: Earthquake, aftershock prediction, cost-sensitive classification, multi-objective.

**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING BASED INFORMATION
MANAGEMENT RESEARCHES IN THE FIELD OF DISASTER AND EMERGENCIES:
A BIBLIOMETRIC ANALYSIS FROM 1995 TO 2022 AND RESEARCH**

AGENDA

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ABSTRACT

Information management for disaster and emergencies is vital for minimizing the loss of life and property. Today, artificial Intelligence and machine learning methods have attracted much attention as a promising tool for managing the information.

In this study, it is aimed to make a holistic summary of the artificial intelligence and machine learning based information management researches in disaster and emergencies through bibliometric analysis, to determine the top cited publications, and to determine the most active journals and especially trend topics via “R” Bibliometrix package and Vosviewer.

The bibliometric review covers 714 papers that were published between 1995 and 2022, and retrieved from the SCOPUS and Web of Science Core Collection database which focused on artificial intelligence and machine learning based information management researches in disaster and emergencies.

The findings indicate that the most researches were conducted between the years 2016-2020. Two journals, IEEE Transactions on Parallel and Distributed Systems and Journal of Artificial Intelligence Research, were the most cited sources. Proceedings of The International ISCRAM Conference was the most contributive conference where the Advances in Intelligent Systems and Computing was the most contributive journal. China and The USA were the two countries that contribute to more than half of the literature in terms of both the number of publications and the number of citations, respectively. Tsingua University was the most affiliating institution. Shu-Ching Chen was the author who had contributed the highest number of papers. Li, Ming (2013) was the most cited paper. More than half of the researches were focused on the subject areas of computer science, engineering, decision sciences and mathematics. It attracts attention that author keywords such as big data, disaster management, information management, cloud computing, data mining, emergency management, decision support systems, artificial intelligence, machine learning, social media and decision support system; abstract texts such as emergency management, disaster

management, decision support, cloud computing, social media, data mining, data management, information management and machine learning were used in the majority of documents, proportionally and respectively.

It is observed that while decision support systems and information management were the trend topics in the studies before 2005, geographical information systems and disaster management topics started to come to the fore until 2011. From 2011 to 2016, the concepts of disaster management, emergency management and low-intensity artificial intelligence studies started to attract attention. Since then, the concepts of big data, machine learning, data mining, internet of things, cloud computing, remote sensing, clustering and social media data have become trend topics.

Keywords: Bibliometric Analysis; Artificial Intelligence; Machine Learning; Information Management; Disaster; Emergency.

SYSTEM ANALYSIS AND DESIGN APPLICATION FOR A SYSTEM WHERE DISASTER VICTIMS' INFORMATION CAN BE TRACKED INSTANTLY

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ABSTRACT

It is important to determine the principles to be used in the development stages so that a system can accurately and completely record all the information that may arise in disasters and that may be needed later. In this context, it is important to record all the necessary information about the disaster-affected places, the victims and the search and rescue teams in relation to each other and to control the data centrally. Thus, in addition to the follow-up of the victims, it will be possible to obtain some statistics about the disaster or emergencies and to store valuable data for data mining studies.

Within the scope of this study, a framework was tried to be drawn for the project to be developed in order to follow the information of the disaster victims. In this direction, system analysis and design processes were studied. During the design phase, it has been studied how this system can be modeled from the perspective of the system developer with diagrams such as user state diagrams, work flow diagrams, data flow diagrams and UML diagrams.

IMPROVING DISASTER RESILIENCE USING WEB AND MOBILE BASED DISASTER MANAGEMENT SYSTEMS

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ABSTRACT

Precaution is the only way to minimize damage from natural and human-made disasters. Being prepared requires conscious planning and effective use of technology. Together with the developing technology, the power and efficiency of communication and informatics show their effect on our lives. Above all, technology enables the prediction, prevention, or preparedness of possible disasters. Communication and information technologies are one of the necessities required for us to be prepared and with the least damage against these fatal events that cause great losses. At this point; microprocessors, Internet of Things, cloud computing, robots, mobile applications, artificial intelligence, deep learning, sensors, RFID, GPS, virtual reality/augmented reality, 3D printing, drone, big data, blockchain technology based innovative technologies are available and, they are utilized in disaster management. In addition, social media tools that provide inter-party connectivity and enable to obtain data from its users also have important potentials. The technologies featured here can be found in many areas of life and become widespread as they get cheaper. For instance, the Internet of things provides connectivity to everyone and everything through sensors placed on objects. It is possible to obtain artificial intelligence with the data formed through this connectivity. Especially the prevalence of data production and the development of techniques such as machine learning and deep learning make artificial intelligence popular.

Many technologies, from social media to artificial intelligence and robotics, have begun to be used within the scope of disaster management. Sensors collect data from areas at risk of disaster with mobile internet and internet of things. Thanks to this collected data, with the established models and performed analyzes, it is ensured that threats are detected in advance and necessary measures are taken in a timely manner. Disaster tracking applications on mobile phones also provide low-cost, simple solutions. In this way, the necessary data can be easily conveyed to the relevant people. Today, with the widespread use of mobile devices, it is inevitable to use these technologies as a post-disaster information sharing environment. The use of web and mobile technologies by citizens after a disaster increases resilience against disasters. Successful disaster management strategies depend on the availability of accurate and timely information. Information is important as it increases the performance of the decision-making process and can therefore contribute to good management. As a result, web and mobile-based disaster management tools have a positive contribution to disaster resilience. In addition, the mobile application allows users to share vital information and be informed after the disaster. In this way, it allows decision makers

to make better decisions and to carry out disaster management efficiently. This study focuses on increasing disaster resilience by using web and mobile technologies to enable citizens to play an active role in disaster management. In this study, it has been studied how the developments in web and mobile technology can serve humanity more beneficially. The effective use of this technology in minimizing the loss of life and property in disasters is emphasized.

Keywords: Disaster management, Information technologies, Decision support systems, Web and mobile applications.

**TURKISH-ENGLISH MACHINE TRANSLATION USING NATURAL
LANGUAGE PROCESSING AND DEEP LEARNING**

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ABSTRACT

Natural language processing is a field of artificial intelligence that deals with the processing of natural languages to enable computers to understand speech or text in natural language. The subject of natural language processing that aims to automatically analyze, understand, interpret and produce natural languages, is seen as a sub-branch of artificial intelligence and linguistics. Natural language processing allows humans to interact with computers using their natural language and allows computers to analyze human language. Automatic translation of a language (source language) to another (target language) is known as machine translation and is an important topic in computer science and natural language processing. Translation from one language to another can be done automatically using machine translation.

In this study, tokenization has been done in order to divide the text into operable elements, namely tokens and Turkish-English translation has been done automatically using Seq2seq architecture. The data set contains commonly used data in English and its Turkish equivalent, and these are kept in two different lists. Seq2sec is based on Recurrent Neural Network architecture and consists of two Recurrent Neural Networks. These are encoder and decoder. The encoder outputs the hash of the received vector as a vector. Then this vector is given to the decoder that produces the output with the decoder. The function of the encoder is to process the input, while the decoders are to process the output. The text has been extracted as a vector using this neural network. In this study, our model has been trained using sparse cross entropy and an exemplary model has been proposed by developing a machine translation system between Turkish and English. After the system we have developed analyses all the words in the sentence morphologically, it translates grammatical and root words and presents the morphologically translated text to the user. The developed model predicts the text received during the testing phase. In this study, a word-based comparison has been made with the actual results of our model for incoming texts.

Keywords: Natural language processing, Machine Translation, Deep Learning

IMPACT OF DIGITALIZATION ON CRISIS COMMUNICATION**Ilkay GULERYUZ¹***¹Gendarmerie and Coast Guard Academy, ORCID: 0000-0002-4700-3386***ABSTRACT**

The digitalization, which is among the important and indispensable strategies of today's management world, shows itself in crisis management as well as in many management disciplines. The crisis, which is defined as a state of tension that threatens the high-level decision-making mechanisms of organizations and forces managers to make decisions under time pressure, can become a less harmful concept with a good communication strategy. If the crisis, which is an important element of the crisis management process, can be managed effectively, it may even be possible to turn the crisis into an opportunity. Therefore, the best possible methods and strategies should be chosen for crisis communication, which is defined as the process of informing the public about the current situation by informing the internal and external stakeholders of the organizations in the pre-crisis, crisis and post-crisis periods. These disaster situations, which have consequences ranging from threatening the life and existence of organizations, can be overcome by conducting a good crisis communication. At this point, digitalization provides important conveniences and advantages to organizations. It is possible to reach very large masses in a very short time through social media, which is a two-way communication tool. In this way, organizations have the opportunity to express themselves in the most effective way.

Qualitative analysis methods were used in this study. A meta-analysis study was conducted for the use of digital communication tools, especially social media, in times of crisis. In this process, it was determined that the literature was not rich enough on this subject, and it was aimed to contribute to the literature in this respect. In addition, positive and negative case studies in Turkey and the world in recent years have been examined. By analyzing these case studies, the stages of creating an effective and efficient crisis communication system through social media were evaluated. Comparing both successful and unsuccessful cases revealed not only what should be done but also what should not be done. As a result, it has been seen that organizations that use the advantages of digitalization well come out of the crisis with less damage or loss.

Keywords: Crisis, Crisis management, Crisis communication, Digitalization.

**INFORMATION NEEDED ABOUT AFFECTED PEOPLE IN EMERGENCY AND
DISASTER MANAGEMENT**

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ABSTRACT

As it is known, disasters are events that occur due to natural, technological or human-induced effects and cause serious loss of life and property in the places where they occur. When evaluated in terms of the importance and sanctity of human life, it can be claimed that the most important consequence of disasters on society is the loss of life they cause. After any disaster in the world, search and rescue teams trying to reach the disaster area as soon as possible and make a great effort to save the lives of as many people as possible, but not everyone who is exposed to a disaster can survive. There are legal consequences to the dissolution of the personality of the individual due to death, as well as the humanitarian and conscientious aspects of the proper burial of the deceased person. In addition, it is socially important that those who lost their lives as a result of a disaster are remembered by their relatives depending on their beliefs and cultural values. For this reason, it is extremely important to determine the identity of the person to be buried before burial. Especially if the death occurred due to a disaster, the process of identifying the deceased becomes even more important. In this study, the information that needs to be collected to identify the deceased after events such as disasters that cause multiple deaths is analyzed.

Keywords: Disaster Victim Identification, Disaster Management, Information Management, Death

NEUROLOGICAL DISORDERS IN DISASTERS

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ABSTRACT

Disasters are large-scale events that cause unpredictable trauma, destruction and death. Natural disasters include earthquakes, hurricanes, floods, wind storms, snowstorms, volcanic eruptions and forest fires.

Neurological disorders in times of disaster consist of pre-existing and non-aggressive chronic diseases and acute pathologies resulting from the disaster. Acute pathologies: It is seen as acute damage of cerebral, spinal, plexus and peripheral nerves. Traumatic cerebral injuries, post-traumatic epilepsy and headaches are common.

Traumatic cerebral injuries: Cerebral damage, which emerges as a public health problem, is solved by making the use of seat belts and safes and workplace health and safety methods mandatory.

2-Post-traumatic epilepsy: The severity of traumatic cerebral injury has been identified as an important factor determining the development of post-traumatic epilepsy.

The occurrence of epilepsy, characterized by the development of post-traumatic permanent seizures, complicates the process of post-traumatic brain injury. Decisive factors in epileptogenesis are cerebral injuries with CRPS, focal or generalized ischemia, intracranial hemorrhages, irreversible necrosis and tract damage.

3-Post-traumatic headaches: Headaches, which can last up to one year after traumatic brain injury, start at rates ranging from 30% to 90%. The mechanisms of chronic success after trauma overlap with the mechanisms in the pathogenesis of migraine. Headache is similar in phenotype to migraine headache.

4-Medulla spinalis traumas: Spinal traumas, in terms of their characteristics, do not only develop due to disasters. In addition, and most importantly, it is due to the practices of rescue teams other than professional approach methods. It is essential to transport the victims, especially on the trauma board. The aim of treatment in acute traumatic spinal injuries is to preserve healthy neurological functions, to prevent the development of secondary injuries and to provide spinal stabilization. Preservation of diaphragm functions is important in spinal traumas. Because monitoring of respiratory status is vital. Estimation of mechanical ventilation requirement and duration, as well as determining the need for tracheostomy are important steps of medical treatment.

5-Peripheral nerves consist primarily of cranial nerves, and in the body, nerves in the upper and lower extremities, which are the continuation of spinal nerves. Loss of muscle strength in motor damage can be partial or complete. Loss of sensation, decreased

sensation, paresthesia, and hyperesthesia may occur in sensory nerve damage. Low hand in radial nerve damage, low foot in peroneal nerve damage, and weakness in the arms starting from the shoulder in brachial plexus damage. All injuries should be evaluated with a multidisciplinary approach by neurosurgeons, orthopedists and cardiovascular surgeons as needed, and centers should be organized and activated in this way. The rehabilitation phase of the treatments is very important because of the limited surgical treatment of these injuries.

6- Deaths caused by people with chronic diseases, limited access to health services, malnutrition and infectious diseases are considered normal.

Seizures, increased incidence of stroke, exacerbations of dementia symptoms, vertigo, headaches, and the emergence of diseases controlled by vaccines are the main neurological problems in earthquakes that are in the near-turn.

One of the important post-traumatic conditions seen in earthquakes is compartment syndromes. Thiamine, zinc and iron are among the specific nutritional deficiencies identified primarily. Wernicke's encephalopathy or Wernicke-Korsakoff syndrome is associated with amnesia and altered consciousness. Wernicke's encephalopathy, which occurs with thiamine deficiency, may start with ataxia, especially as the first symptom. Thiamine deficiency is the main cause of infant death. It can also be seen in retrobulbar neuritis, sensorineural deafness, dorsolateral myeloneuropathy, dysphonia, dysphagia, spastic paraparesis and distal peripheral axonal neuropathy. Long-term comprehensive approaches should be developed with a perspective beyond trauma treatment.

Keywords: Neuropsychiatric Disorders

COVID-19 IS A NEW CYBER THREAT TO STATES AND INDIVIDUALS

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ABSTRACT

In this study, in parallel with the emergence and rapid development of the Internet with the development of technology, computers have become portable everywhere with the reduction of hardware and structures. In parallel with the development of computers, mobile devices are replacing computers with different operating systems with the rapid development of mobile device technology. Our goal in this study is analytical examination of cyber attack methods, Bio-terrorism and bio-attack on the topics of evolution and how these issues has been mentioned briefly on separate cyber information systems has become a threat that occur as directed against the individual and the state, or that may occur with new measures to be taken against cyber threats, cyber security and cyber threat analysis will consist of.

Keywords: COVID-19, Cyber Threat, Cyber Attacker, Cyber Security, Malicious Malware

**THE POSITIVE EFFECT OF COVID-19: THE REDUCTION IN TRAFFIC
ACCIDENTS**

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ABSTRACT

Disasters have existed in our lives in different forms throughout history and have caused economic and social losses in societies. The types of disasters and their priority differ depending on where each country is located on the globe. Due to its geological structure, natural disasters such as earthquakes, floods, avalanches, forest fires, landslides, and technological disasters such as industrial accidents and transportation accidents are frequently seen in Turkey. Although disasters show regional differences, the Covid-19 pandemic, which caused a biological disaster, resulted in significant losses both in Turkey and the world. While the Covid-19 epidemic claimed millions of lives around the world, it also dragged countries into an economic, social, and psychological impasse. All disasters have negative impacts. These negative consequences can be direct or indirect and secondary. Despite the detrimental repercussions of the Covid-19 outbreak in many places of Turkey, it had a favorable impact on the frequency of traffic accidents. The reduction in the number of accidents and dead/injured has indirectly reduced the burden of health-care professionals, who are at the forefront of combating the epidemic in Turkey in this process.

This study analyzed the effect of quarantine measures taken during the fight against the Covid-19 epidemic in Turkey on traffic accidents. Accordingly, the decrease in traffic accidents in March, April and May 2020, when full closure took place, is noteworthy. When the total number of traffic accidents in 2019 is compared to the total number of traffic accidents in 2020, it is seen that traffic accidents have decreased by 12.5%. With the gradual normalization process that began after June 2020, there has been an approximately 5% increase in traffic accidents compared to the previous year. As a result of the measures taken by the government to keep the Covid-19 epidemic under control, the mobility in traffic has decreased with the decline in travel across Turkey. Thus, the Covid-19 outbreak has reduced traffic accidents.

Keywords: biological disaster, Covid-19, traffic accidents

**FORENSIC MEDICINE APPLICATIONS IN DISASTER AND EMERGENCY
SITUATIONS**

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ABSTRACT

The most beautiful gift given to man is the “Right to live”, which is the precondition of all rights in the context of human rights. The result called “Death”, which occurs with the termination of this right, brings positive duties and obligations to real persons and organizations, especially the legal entity called the State.

In natural, technological or man-made disasters and emergencies that disrupt social life by causing material and moral damages for the whole or certain segments of the society, the most important thing is to determine the identities of the deceased and to perform religious rituals according to their belief systems, as well as the search and rescue of the victims of disasters, and the provision of medical services.

Depending on the severity of the disaster, the management of the disaster crisis requires a great national and international organization before and after the disaster. In order for this process to come to a successful conclusion, the undoubted identification of the victims of the disaster within the scope of the necessary coordination is an important problem both in legal, religious and humanitarian terms.

In this article, basic information about the identification of disasters victims will be mentioned and evaluation will be made on the examples of the Council of Forensic Medicine, which has an important knowledge, experience and memory in Türkiye.

Keywords: disaster, identification, forensic medicine

CLIMATE CRISIS AND DISASTER RISK FINANCING

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ABSTRACT

The climate crisis, which has emerged as a result of the destruction of humanity on nature in recent years, is a subject that is emphasized more than ever before. The issues raised under the umbrella of the climate crisis are very important for the continuity of life in nature. Changes in the climate have brought along natural disasters, the frequency of which has increased in recent years. In our country, 984 disasters occurred in 2020 with the effect of climate change. This number has been recorded as the highest number of natural disasters since 1940. The requirements of protecting nature and the steps to be taken in order to minimize the negative changes in the climate are tried to be taken with the joint work of many countries. Individuals and institutions, on the other hand, apply to insurance institutions in order to be protected from the negative effects of natural disasters that are experienced so frequently. There are many types of insurance, depending on the types of risks you may face. The recent increase in the type and number of risks has increased the importance of insurance companies. Financially, risk management is aimed at maintaining the rate of return that businesses expect from their investments. In this respect, businesses apply to insurance companies in order to protect themselves from risks in many respects. Insurance companies, which ensure the reduction of losses in different adverse situations, are vital institutions for economic systems. It is very important for these companies to have a strong financial structure in order to fulfill their objectives. In 2021, the trading volume of the Borsa Istanbul Insurance Index was TL 4,614 billion. In our study, the last 5 years' balance sheet data of Türkiye Sigorta, which is the insurance company operating in Borsa Istanbul and has the largest transaction volume, has been analyzed by comparative analysis method. The findings of the study will be shared in the conclusion part.

Keywords: Climate Crisis, Risk Financing, BIST

**THE EFFECTS OF CLIMATE CONDITIONS ON OCCUPATIONAL HEALTH AND
SAFETY AND EMPLOYEE PERFORMANCE IN THE LOGISTICS SECTOR;
COMPARATIVE EXAMPLE OF KARS AND ADIYAMAN PROVINCES**

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ABSTRACT

Occupational health and safety is an inevitable fact to increase the knowledge of information activities in order to ensure that all employees working with the knowledge of a healthy and safe working environment have information. In this work we have done, studies have been made specifically for the sector, and the provinces of Kars and Adıyaman are targeted. Detailed information has been given about the occupational health and preparations required to be guided before they are completed in a way that will be designed, with regard to being directed from the target in the design to be determined as final in the design, and detailed information about their guidance from their intended performance in general with the completion to be completed. examination has been made. As a result, in order to obtain a result, settings related to the jobs that can be adjusted according to the climate in terms of appearance have been tried to be made and these background settings will be used because they will benefit.

Keywords: Occupational health and Safety, logistics industry, climate conditions

USE OF GEOGRAPHIC INFORMATION SYSTEMS IN DISASTERS

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ABSTRACT

Disasters are among the events that negatively affect people's normal lives. Especially, people can be helpless against sudden situations as a result of sudden disasters (earthquakes, floods, storms, fires and landslides). In the event of a disaster, many negative and sad situations arise due to the impact of turmoil and panic. In these cases, it is very important to minimize the damage and to intervene quickly. Thanks to developing technologies and human sensitivities, activities such as contact and communication, shipping and transportation, transfer of qualified personnel to the scene and health services in the event of a disaster should take place in very fast and effective ways and are very important for disaster management. The geographic information system (GIS) is one of the fastest and most effective developing technologies among today's technologies. GIS is an information infrastructure that provides a lot of spatial information to our service and is used a lot in disaster management. The image and spatial information obtained thanks to the developing satellite and camera systems continues to provide services for disaster management by being less affected by the communication and internet problems that occur in disaster situations. Considering how important it is to race against time in disaster situations that are getting worse for the victims at every passing moment such as activities such as quickly reaching the disaster victim and then transferring the information about the location to the system and the place where he is transferred are very important. In disaster management, the data and information obtained and their follow-up, analysis and evaluation are of great importance. As a result of maps, information, relations and evaluations produced by GIS, victims at the scene can be reached very quickly and accurately, and appropriate interventions can be made. Thanks to the advantages provided by GIS, the identification and diagnosis of disaster victims will be accelerated, access to responsible persons will be facilitated, data, information, relations and analyses of the place can be displayed, relevant resources and requests can be determined, communication with institutions and organizations will be established, correct information will be available after the disaster and very important information will be obtained about the next disaster situations.

The usage areas of GIS are in an individual, social and global sense, maps, locations, way finding, city and regional planning, city information system, tourism information system, health, education, natural resource tracking information systems, agriculture, environment protection, transportation, forestry, infrastructure systems, land registry and cadastral information systems, traffic monitoring and control systems, yield estimation of agricultural lands, determination of spatial correlations of diseases, real-time monitoring of a transportation network, determination of illegal cutting areas

in a forest, detecting illegal construction, web-based monitoring and management of vehicles, determining the direction of city development, inventory and management of water, food, energy, and mineral resources, intelligence gathering about enemy areas in the military, and the determination of military defense areas, natural disaster management information systems, earthquake and post-disaster damage assessment, examination of earthquake and disaster situations, geographical and related. It has a wide variety of effective uses in many other fields, such as its use in other sciences. In this study, the above mentioned usage areas; field operations, coordinate and location operations, institution and organization operations, food and basic needs information operations, human and asset operations, climate and geographical information operations, with temporal and spatial relations information operations, disaster preparedness and management operations, automation and interactive information systems that has been deemed appropriate to separate them according to their goals and purposes as transactions belonging to them. In this study, the benefits and effects of GIS will be emphasized within the framework of the mentioned titles. In addition, it is mentioned that GIS is one of the most important technological developments used in disaster and emergency situations to minimize the loss of life and property, with an easy perception at the administrative level, to intervene and to be prepared for subsequent disaster situations.

Keywords: Disasters, Geographic information System, Information Systems, Technologies

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25 January 2022 Tuesday

09:30	Opening Ceremony
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SESSION 1	
Time (GMT+3): 10:30-12:00	
CHAIRS: FARUK BATALALP GUNAY – AYCA CALBAY	
10:30-10:40	Emergency and Disaster Interpreters in Turkey (ARÇ) as Facilitators and Communication Agents in a Disaster Environment: EU-MODEX 2021 Turkey Example Rana Kahraman Duru, Rabia Odabasi, Turkey
10:40-10:50	Forensic Medicine Applications in Disaster and Emergency Situations Ahmet Nezihi Kok, Yalcin Buyuk, Omer H.A. Muslumanoglu, Turkey
10:50-11:00	Special Groups in Disasters Atif Bayramoglu, Fatma Cakmak, Turkey
11:00-11:10	Neurological Disorders in Disasters Mehmet Nuri Kocak, Turkey
11:10-11:20	Traumatic Injuries in Disasters Ayca Calbay, Turkey
11:20-11:30	Emergency Materials Used in Higher Education Institutions in Disaster and Emergency Situations Huseyin Gulluce, Selcuk Sincar, Turkey
11:30-11:40	Obligations of the Regulation on Emergencies to Public Institutions Selcuk Sincar, Huseyin Gulluce, Turkey
11:40-11:50	Disaster and Emergency Management Selcuk Sincar, Turkey
11:50-12:00	45001 Occupational Health and Safety Management Sysytem Standard and Transition Process Selcuk Sincar, Ruhi Yesildal, Turkey

SESSION 2	
Time (GMT+3): 13:30-15:30 – CHAIRS: EMIN ARGUN ORAL – ATIF BAYRAMOGLU	
13:30-14:00	KEYNOTE SPEAKER: Kenny Meesters, Netherland (Netherlands Time: 11:30 – 12:00)

SESSION 2	
Time (GMT+3): 13:30-15:30 – CHAIRS: EMIN ARGUN ORAL – ATIF BAYRAMOGLU	
14:00-14:30	KEYNOTE SPEAKER: Thomas Peter, Switzerland (Swiss Time:12:00-12:30)
14:30-15:00	KEYNOTE SPEAKER: Lars Peter Nissen, Switzerland (Swiss Time: 12:30 – 13:00)
15:00-15:30	KEYNOTE SPEAKER: Irina Temnikova, Bulgaria (Bulgarian Time: 14:00 – 14:30)

26 January – Wednesday

SESSION 3	
Time (GMT+3): 10:00-11:40	
CHAIRS: FERHAT BOZKURT – VEYSEL FATI H OZDEMIR	
10:00-10:10	Covid-19 is a New Cyber Threat to States and Individuals Bulent Altuntas, Muhammed Dursun Kaya, Turkey
10:10-10:20	Failure of Initiative: Lack of Situational Awareness Alper Bilgic, Turkey
10:20-10:30	Impact of Digitalization on Crisis Communication Ilkay Guleryuz, Turkey
10:30-10:40	Information Needed About Affected People in Emergency and Disaster Management Ali Utku Sahin, Kemal Kocak, Turkey
10:40-10:50	Turkish-English Machine Translation using Natural Language Processing and Deep Learning Mete Yaganoglu, Ferhat Bozkurt, Turkey
10:50-11:00	Improving Disaster Resilience Using Web and Mobile Based Disaster Management Systems Ferhat Bozkurt, Turkey
11:00-11:10	Cost Sensitive Aftershock Prediction Model: Case Study in Turkey Mehlika Eraslan Celik, Mihrimah Ozmen, Turkey
11:10-11:20	The Effects of Climate Conditions on Occupational Health and Safety and Employee Performance in the Logistic Sector; Comparative Example of Kars and Adiyaman Enes Gurtay, Ismail Cakmak, Selcuk Sincar, Turkey

	SESSION 3 Time (GMT+3): 10:00-11:40 CHAIRS: FERHAT BOZKURT – VEYSEL FATİH OZDEMİR
11:20-11:30	Artificial Intelligence and Machine Learning Based Information Management Researches in the Field of Disaster and Emergencies: A Bibliometric Analysis from 1995 to 2022 and Research Agenda Hamit Erdal, Sinan Kul, Turkey
11:30-11:40	Neuropsychiatric Disorders in Disasters Nese Ozyigit Hocaoglu, Turkey

	SESSION 4 Time (GMT+3): 13:00-14:00 CHAIRS: SINAN KUL – ENSAR AGIRMAN
13:00-13:10	Analysis of Vulnerability Level With GIS of Building Stock to Earthquake Muhammed Nedim Sahvelet, Nuriye Kabakus, Turkey
13:10-13:20	The Positive Effect of COVID-19: The Reduction in Traffic Accidents Nuriye Kabakus, Muhammed Nedim Sahvelet, Turkey
13:20-13:30	Effects of Social Media Management on Natural and Human Related Disasters: COVID-19 Pandemic Period T.R. Ministry of Health Twitter Shares Ugur Dagtekin, Ahmet Kamil Kabakus, Turkey
13:30-13:40	Climate Crisis and Disaster Risk Financing Osman Can Barakali, Ensar Agirman, Turkey
13:40-13:50	Use of Geographic Information Systems in Disasters Muhammed Fatih Alaeddinoglu, Turkey
13:50-14:00	System analysis and design application for a system where disaster victims information can be tracked instantly Sinan Kul, Hamit Erdal, Turkey

	SESSION 5 Time (GMT+3): 14:30-16:00 CHAIRS: BURAK ERKAYMAN – DOGAN BIYIKLI
14:30-15:00	KEYNOTE SPEAKER: Gianluca Pescaroli, UK (UK Time: 11:30 – 12:00)

	SESSION 5 Time (GMT+3): 14:30-16:00 CHAIRS: BURAK ERKAYMAN – DOGAN BIYIKLI
15:00-15:30	KEYNOTE SPEAKER: Phil Crook, UK (UK Time: 12:00 – 12:30)
15:30-16:00	KEYNOTE SPEAKER: Scot Phelps, USA (NY Time: 07:30 – 08:00)
16:00	CLOSING CEREMONY



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