SYSTEMATIC REVIEW

Disaster Literacy and Public Health: A Systematic Review and Integration of Definitions and Models

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ABSTRACT

Objective: The aim of this study is to develop an integrated definition and a conceptual model covering the dimensions of disaster literacy.

Methods: A systematic literature review was conducted to identify the definitions and conceptual frameworks of disaster literacy. The content analysis of definitions and conceptual frameworks were conducted to identify the central dimensions of disaster literacy and to develop an integrated model.

Results: In this study, 8 disaster literacy definitions and 4 conceptual model studies related to disasters were found. In line with these studies, a comprehensive definition of disaster literacy was presented. In addition, based on content analysis, a 16-matrix integrative conceptual model of the mitigation, preparedness, response and recovery dimensions of disaster literacy, and the access, understanding, appraisal, and application areas of disaster information processing were developed.

Conclusions: In this study, a comprehensive definition and conceptual framework of disaster literacy were presented in an integrated model. By using this model, practices that are special to the phases of a disaster can be identified and supported in society. In addition, the model can contribute to empirical studies by providing the basis for the development of tools to measure disaster literacy.

Key Words: disaster literacy, disaster model, disaster preparedness, measurement, scale

Disaster literacy is a new concept that has an increasing importance in disaster science in recent years.[1] It is a term that is concerned with building the preparedness capacity of people in order to implement complex response strategies created for disasters in today's modern societies.[2] Disaster literacy means that individuals know which hazards pose a problem for themselves, their family, and their society; which factors affect these hazards; and how they can be handled. Persons with an adequate level of disaster literacy can assume responsibility for their own health, as well as for their family and community health. In other words, the scope of disaster literacy is to make the community resistant to disasters[3] by developing preparedness and mitigation knowledge along with the abilities required for disaster response and basic skills and behaviors for disasters.[4] This concept provides a good starting point for the individual and society to take action against risk reduction and mitigation.[5]

Disaster literacy should be distinguished from general literacy. As a concept, literacy has proven to be both complex and dynamic and continues to be interpreted and defined in many ways. In English history, *literate* means "familiar with literature" or "well educated, learned."[6] According to UNESCO, "Literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts."[7]

UNESCO has proposed 4 areas that provide a common view in which we can better understand the approaches and consequences of literacy in different traditions. These fields are literacy and learning, cognitive approaches to literacy, social practice approaches, and literacy as text.[8]

The same method can be followed in the field of disaster literacy. The individuals must follow a complex set of skills linked to one another by accessing written information about hazards and reading, understanding disaster instructions, determining the action to take based on this information, and taking the action in line with their needs to reduce vulnerability.

Individuals with inadequate health literacy have less access to health information.[9] Likewise, a low level of disaster literacy can also lead to being caught more unprepared for disasters. Vulnerable adults with sensory,[10] physical, and cognitive impairment[10,11]; social isolation; and low education level[12] are known to be at greater risk due to adverse conditions during and after disasters.[10,11] Inadequate disaster literacy can be an indication of inadequate health care. However, contrary to the well-defined importance of health literacy in identifying health risks and consequences,[13] the role of disaster literacy in influencing health and safety is not yet known. Therefore, disaster literacy may play a role in shaping health systems in the future.

It can be seen that disaster literacy studies have started in the last 10 years. Since studies in this field are at an early stage[14] and therefore relatively new, there may be discussions about new definitions and frameworks of the concept. This study aims to provide a systematic review of the current definition and concept models of disaster literacy studies reported in the international literature and to develop a conceptual model that will provide a comprehensive definition and evidence-based dimensions of disaster literacy.

METHODS

The steps followed in this systematic review include a description of the work; literature search about the questions, data selection, and data collection process; and evaluation and analysis of the quality of the evidence.[15,16]

Description of the Work

PICOS was used for criteria compliance. First, 2 research questions (**P**roblem) were created: (1) *How is disaster literacy defined?* and (2) *How can disaster literacy be conceptualized?* The first question also examines different models of disasters related to different literacy definitions (**I**ntervention). The comparison of these definitions and models is conceptually provided (**C**omparison). Definitions and models produced by different authors also constitute outcomes (**O**utcomes). In the research, all of the studies published in English (**S**tudy designs) were examined. PubMEd and Web of Science were searched for the 2 research questions by 2 researchers independent of each other between January 1, 2019, and January 3, 2019. For the gray literature, the Google search engine and bibliography of related publications were used. Publication date and publication restrictions were not imposed.

Literature Search About Questions, Data Selection, and Data Collection Process

A combination of 7 key words (*definition, model, concept, dimension, framework, conceptual framework, theory*), 1 concept (*disaster literacy*), and "and conjunction" was searched in the databases. In addition, the search was also conducted with the words of *disaster* and *literacy*. The search syntax is given online in Annex-1. For the selection of the data, the studies were included in the research with an examination of the abstracts of the publications by 2 independent researchers. Being written in the English language and presenting content related to the definition and conceptualization of disaster literacy or a combination of problems were the inclusion criteria for the publications. A form was created to extract data from publications through content analysis (competence, action, information, objective, context, time). While the review author extracted the raw data from the included studies, the second author checked the extracted data. Disputes were resolved with discussion between the 2 authors of the review.

Evaluation and Analysis of Evidence Quality

The probability of the results reported in a systematic review to be closer to the reality depends on the methodological dimension of included studies and its validity. Since all of the publications used in the research went through a referee evaluation process during their publication, the results were assumed to be valid. In order to eliminate the risk of bias, the extracted data were discussed by the authors, and no publications about research questions were left out. The publications obtained from the literature were examined independently of each other in the context of research questions, and the data collection form mentioned in the data collection process was completed. In the first step, literacy definitions related to disasters were given, and the areas where they were concentrated were extracted with a data form. In the second step, a general evaluation of the models in the literature was made in terms of dimensions, precursors, and results. In the third step, an all-inclusive disaster literacy definition that captured the different meanings and dimensions presented in the literature and a model that covered it were developed.

RESULTS

Figure 1 shows the number of the publications that were scanned, found eligible, and excluded (with reasons). As a result of the single use of the search concept and the search conducted with a combination of the key words and the concept of disaster literacy, a total of 181 publications were drawn from 175 publication databases and 6 publications from the gray literature. After the repeating publications were removed, 158 publications remained; 142 of these publications were removed since there was no relationship between any type of disaster and literacy. The remaining 16 publications were examined in more detail during the selection process. It was found that 6 of them did not include any definition of disaster literacy or a conceptual model suggestion, and 3 of them received the definition of literacy from another study. Therefore, it was decided to obtain the data from 7 publications (Figure 1). All of the publications[17-23] provided a definition or model of literacy. Since 1 of the publications was a congress text, the full text could not be reached.[18]

Disaster Literacy Definitions

When the inclusion criteria were applied to the publications, it was found that 7 publications identified 8 different definitions or conceptual frameworks related to disasters. In addition, 1 of the publications[21] described a disaster literacy definition that belonged to another work and the original work could not be reached. Various literacy definitions related to disasters are given in Table 1.

The content analysis of the definitions is given in Table 2 under 6 clusters: competence, action, information, objective, context, and time. The concepts of attitude, skills, ability, capacity, and capabilities are included under the qualification

FIGURE 1

Flow of Information Through the Different Phases of a Systematic Review.
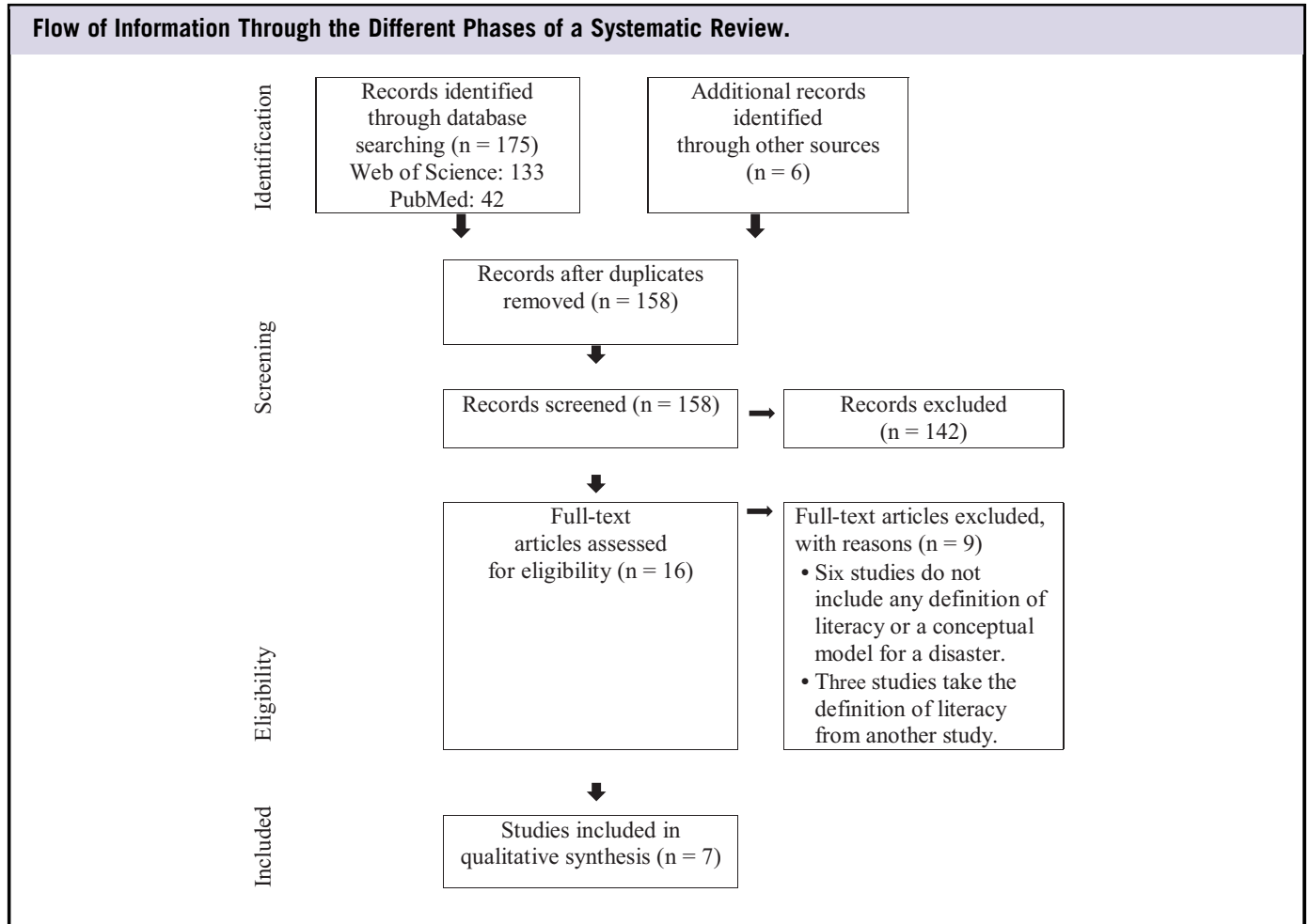
set of definitions. Actions include to identify, to understand, to interpret, to communicate, to read, to understand, to use, to follow, to make quick decisions, to develop a proactive attitude, to respond, to analyze, to reflect, to question, and to use. Generally, the sources of the definitions include instruction, information, and techniques. They aim to include making informed decisions, following instructions, survival, coping with disasters, maintaining the well-being of life, and evaluating health care systems. The context of the definitions consists of mitigation, preparedness, response, recovery, prevention, risk reduction, and health determinants. Although no statement about time is given, it is seen that the emphasis is placed before, during, and after the disaster. In this direction, a comprehensive "all-inclusive" definition that captured the essence of the 7 definitions was presented under the title of *Proposal for Definition*.

Disaster Literacy Concept Models

Table 3 lists publications that provided models of disaster literacy and similar concepts. It is seen that the relevant model studies are inadequate. However, it is also seen that studies on disaster literacy are shaped around a multidimensional concept and different components.

Disaster Literacy Dimensions

According to Chen and Lee,[17] Yeh and Inman's disaster prevention literacy model in 2007 (defined as a category) was proposed as a 3-level structure. These levels are disaster prevention knowledge, attitudes, and skills.

Brown et al.[19] proposed the disaster literacy model as a 4-level structure. These levels include basic disaster literacy (basic reading and comprehension), functional disaster literacy (ability to follow disaster preparedness, response, and recovery messages), communicative/interactive disaster literacy (advanced skills in help-seeking), and critical disaster literacy (analysis of disaster information, overcoming barriers, and the ability to take personal control to cope with them).

Kanbara et al.[20] conceptualized the disaster risk-reduction literacy model in 3 dimensions. These include awareness (the value of life and the effects of disaster), knowledge (about

TABLE 1

Definitions of Disaster Literacy and Similar Concepts		
	Author(s) (Year)	**Various Disaster Literacy Definitions**
1	Chen and Lee (2012)[17] [citing Yeh and Inman's 2007 study]	**Disaster prevention literacy** is defined as one's personal knowledge, attitude, and skills toward disaster prevention.
2	Hung et al. (2012)[18]	**Disaster risk literacy** refers to the ability to identify, understand, interpret, and communicate disaster risk-related information.
3	Brown et al. (2014)[19]	**Disaster literacy** is an individual's capacity to read, understand, and use information to make informed decisions and follow instructions in the context of mitigating, preparing, responding, and recovering from a disaster.
4	Kanbara et al. (2016)[20]	**Disaster risk-reduction literacy** is awareness, knowledge, and techniques, which will aid survivors to reduce risks arising from disaster, and make quick decisions about reducing risks.
5	Chung and Yen (2016)[21]	**Disaster prevention literacy** can be conceptualized as the development of the proactive attitude to apply disaster prevention knowledge to cope with the disasters and the capabilities to rehabilitate and improve life after the disasters. According to Chung and Yen, Chiang defined **disaster prevention literacy**, in his 2008 work, as the composite of multiple capabilities and skills, including cognition, skills, and emotion, which will enable an individual to respond, analyze, and reflect in the face of disasters for the well-being of his or her life.
6	Olowoporoku (2017)[22]	**Disaster literacy** refers to the ability to identify, understand, interpret, and communicate disaster-related information.
7	Seifi et al. (2018)[23]	**Disaster health literacy** is the ability to critically question health-related information, the health care system, in general, and then use this information to actively address the social, economic, and environmental determinants of health.

how to use available resources), and technique (the implementation of information, such as preparing an evacuation plan).

The disaster prevention literacy model of Chung and Yen[21] consists of 3 dimensions and 8 subconcepts. Under the dimensions of knowledge, attitude, and skill, the 4 phases of disaster are emphasized.

Antecedents and Consequences of Disaster Literacy

In addition to the dimensions of literacy studies related to disasters, the outlines of the traits that are considered to affect literacy are given in the antecedents, and the main results are given in Table 3. Brown et al.[19] emphasized predisposing and situation factors among the factors affecting disaster literacy. Kanbara et al.[20] stated that individual and regional factors are antecedents. According to Chen and Lee,[17] Yeh and Inman, and Chung and Yen[21] did not include antecedents.

In terms of the results of disaster literacy, Brown et al.[19] defined the results as the individual's capability of understanding various instructions prepared for disaster phases. Kanbara et al.[20] drew attention to the need to take action for security, health protection, and cooperation. According to Chen and Lee,[17] Yeh and Inman, and Chung and Yen[21] did not report the results of disaster literacy.

Proposal for a Disaster Literacy Definition and an Integrated Model

Proposal for a Definition

The areas in which various literacy definitions related to disasters are clustered are given in Table 2 in detail. As a result of the detailed analysis of 7 definitions in the literature by the research team, a comprehensive definition that exhibits the phases of disasters and the competencies of literacy was put forward, as follows:

> Disaster literacy is individuals' capacity to access, understand, appraise, and apply disaster information to make informed decisions and to follow instructions in everyday life concerning mitigating/prevention, preparing, responding, and recovering/rehabilitation from a disaster in order to maintain or improve quality of life during the life course.

Proposal for Model

Although there are few literacy studies related to disasters, it can be said that there is a wide variety among its main components and conceptual models. As in health literacy, this diversity of views can be reduced to 2 dimensions as basic characteristics (basic, functional, interactive, and critical disaster literacy) and scope and application (phases of disaster: mitigation, preparedness, response, and recovery).

Although there are very few conceptual disaster literacy models in the literature, it is seen that Brown et al.[19] conducted a study that outlined disaster literacy. However, the model example may be the subject of discussion in terms of demonstrating the competence that it implies. This is probably due to inadequate attempts to conceptualize disaster literacy. Second, while 1 research includes the definitions of all of the disaster components,[19] it is seen that they are not explicitly stated in any model. Third, there are 2 studies that state that literacy is a process of accessing, understanding, processing, and applying information.[19,22] Fourth, while a few conceptual models reveal the factors affecting disaster literacy, no model explicitly states the relationship between the antecedents and consequences of disaster literacy. To address these shortcomings, we propose an

TABLE 2

	Areas in Which Literacy Definitions Are Concentrated						
	Author(s) (year)	Competence	Action	Information	Objective	Context	Time
1	Chen and Lee (2012)[17] [citing Yeh and Inman's 2007 study]	The attitude and skills	Uncertain	Personal knowledge toward disaster prevention	Uncertain	Uncertain	Uncertain
2	Hung et al. (2012)[18]	The ability	To identify To understand To interpret To communicate	Disaster-related information	Uncertain	Uncertain	Uncertain
3	Brown et al. (2014)[19]	The capacity	To read To understand To use To follow	Information Instructions	To make informed decisions To follow instructions	The context of mitigating, preparing, responding, and recovering in a disaster	Uncertain (but, before, during, and after a disaster)
4	Kanbara et al. (2016)[20]	Awareness	To make quick decisions	Knowledge Techniques	To survive	Reduce risks arising from disaster Reducing risks	Uncertain (but, before, and during a disaster)
5	Chung and Yen (2016)[21]	The capabilities	To development proactive attitude	Knowledge	To cope with the disasters To rehabilitate and improve life after the disasters	Disaster prevention	Before, during, and after a disaster
	[citing Chiang's 2008 study]	The composite of multiple capabilities and skills, including cognition, skills, and emotion	To respond To analyze To reflect	Uncertain	The well-being of his or her life	The face of disasters	Uncertain (but, before, during, and after a disaster)
6	Olowoporoku (2017)[22]	The ability	To identify To understand To interpret To communicate	Disaster-related information	Uncertain	Uncertain	Uncertain
7	Seifi et al. (2018)[23]	The ability	To question To use	Information	To evaluate the health care system	The health-related information and determinants of health	Uncertain (but, before, during, and after a disaster)

TABLE 3

Conceptual Models of Disaster Literacy Definitions			
Author(s) (Year)	**Dimensions**	**Antecedents**	**Results**
* Chen and Lee (2012)[17] [citing Yeh and Inman's 2007 study]	Disaster prevention attitude - Sensitivity of disaster prevention - Disaster prevention-related value - Responsibility to disaster prevention Disaster prevention skills - Preparedness activities - Response activities Disaster prevention knowledge - Disaster recognition - Prevention knowledge - Response knowledge	None	None
†Brown et al. (2014)[19]	- Basic disaster literacy - Functional disaster literacy - Communicative/interactive disaster literacy - Critical disaster literacy	Predisposing factors - Occupation, income, social support, culture, language, race/ethnicity, education, age, vision, hearing, verbal ability, memory, reasoning Disaster situation/patient factors - Navigation skills - Perceived barriers - Knowledge - Beliefs - Motivation - Self-efficacy Disaster situation /external factors - Complexity - Resources - Support - Technologies - Mass media - Messages - Education	The person's understanding of the different spheres of disaster mitigation, preparation, response, and recovery, each of which operates according to different rules, guidelines, and customs
Kanbara et al. (2016)[20]	- Techniques - Knowledge - Awareness	- Individual traits - Regional traits	- Make decisions to guarantee safety - Take appropriate action to safeguard health - Contribute to cooperative assistance
Chung and Yen (2016)[21]	Disaster prevention knowledge: - Disaster knowledge, preparedness knowledge, and response knowledge Disaster prevention attitude: - Prevention awareness, prevention values, and prevention sense of responsibility Disaster prevention skills: - Preparedness action and response behaviors	None	None

*According to Chen and Lee,[17] Yeh and Inman (2007) use category instead of dimension; †Brown et al.[19] use level instead of dimension.

integrated disaster literacy model that captures the main dimensions of the current conceptual models examined previously. Dahlgren and Whitehead's 1991 model of "determinants of health,"[24-26] which was widely used and covered all models on determinants of health; WHO's "social determinants of health" to tackle different levels of literacy inequalities; and the health literacy models of Sørensen et al.[13] were used in designing this model.[24,25]

Along with the characteristics of a logical model showing the conceptual characteristics of the disaster dimensions (oval loop in the midline in Figure 2) and the factors affecting disaster literacy (outside of the midline in Figure 2) placed on the main competencies of disaster literacy around the disaster information in the core, the model combines the linkage of disaster literacy with disaster outcomes. In addition, the model emphasizes that the process of disaster information processing includes the transformation from the individual level to the social level and is a lifelong process.

The core of the model demonstrates the competencies related to accessing, understanding, appraising, and applying to disaster-related information: (1) Accessing means searching, finding, and retrieving disaster information; (2) understanding refers to the ability to understand the accessed information on disaster; (3) appraising means interpreting, filtering, judging, and evaluating the accessed disaster information; and (4) applying refers to the use and transmission of information

FIGURE 2

Integrated Disaster Literacy Model.

presents a 16-matrix structure in which 4 areas of disaster information processing and 4 dimensions of disaster literacy are integrated.
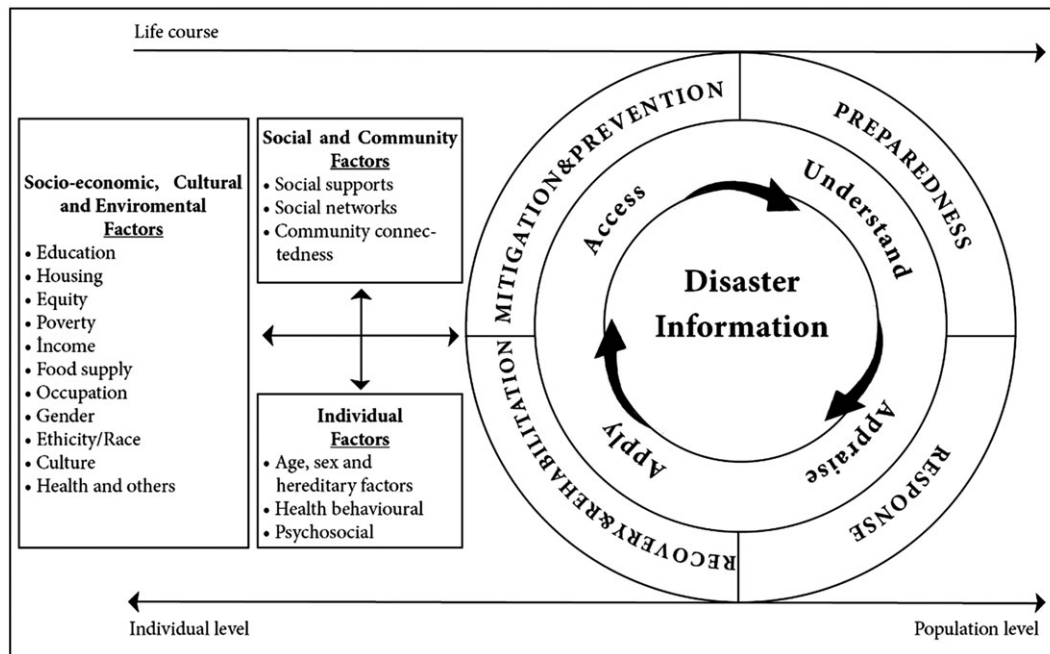
to enable individuals to make decisions to protect and safeguard themselves and their environment. These competencies require specific cognitive qualities and, as Brown et al.[19] note, higher cognitive qualities provide adequate disaster literacy.

In the model, this process is provided with the knowledge and skills that enable the individual to navigate the 4 dimensions of disasters: The individual deals with (1) the mitigation/prevention phase by preventing the hazard or reducing the risk, (2) the preparedness phase by reducing the negative consequences of disasters, (3) the response phase by mitigating damage and loss, and (4) the recovery/rehabilitation phase by remedial actions at family, community, workplace, and political levels. The individual's navigation in these 4 areas is shaped throughout life around the skill and ability to access, understand, critically analyze, and apply the necessary information of the disaster literacy process in the context of individual lifestyle; social and communal networks; and socio-economic, cultural, and environmental conditions.

In the model, the structure associated with the 4 dimensions of the disaster represents a process flowing from the individual level to the social level. Although disaster literacy seems to be essentially based on the individual, it is combined with the "public health" approach by targeting public health.

Table 4 presents a 16-matrix structure in which 4 areas of disaster information processing and 4 dimensions of disaster literacy are integrated.

DISCUSSION

There are a few studies within the scope of disaster literacy and its concepts and model studies in the international literature. This research aims to develop a conceptual model that will reveal a comprehensive definition and evidence-based dimensions of disaster literacy by presenting a systematic review of the current definitions and concepts of disaster literacy.

There are various definitions of literacy-related disasters. According to Chen and Lee,[17] the disaster prevention literacy definition by Yeh and Inman in 2007 determines only the individual's competencies and applicable source. In Chiang's work in 2008,[21] the description of disaster prevention literacy does not include a specific expression of information about disasters and the time of disaster but reveals the individual's goal of survival, as well as competencies and options of action that the individual should have when confronted with disasters. Under the disaster risk literacy concept of Hung et al.[18] and the disaster literacy concept of Olowoporoku,[22] definitions with the same content were used. According to the definition, disaster information refers to the use of indefinite abilities within a scope of actions. The definition specifies purpose, context, and time. The disaster risk-reduction literacy definition of Kanbara et al.[20] does not include an expression specific to disaster time but emphasizes the individual's capacity to use disaster information and fast decision-making action for survival purpose in the context of disaster risks. The disaster prevention literacy definition of Chung and Yen[21] refers to the use of disaster information with an ability of proactive attitude to

TABLE 4

Four-Dimensional Matrix of 4 Disaster Information Processing Process and Disaster Literacy				
Disaster Dimensions	**Disaster Information Accessing the Information**	**Acquisition Processes Understanding the Information**	**Appraising the Information**	**Applying or Using the Information**
Mitigation/ Prevention	**(1)** Ability to access information on hazard prevention and risk reduction	**(2)** Ability to derivate meaning and understand hazard prevention and risk reduction	**(3)** Ability to appraise and interpret hazard prevention and risk reduction	**(4)** Ability to make informed decisions about hazard prevention and risk reduction
Preparedness	**(5)** Ability to access information on actions limiting damage and loss in disasters	**(6)** Ability to derivate meaning and understand actions limiting damage and loss in disasters	**(7)** Ability to appraise and interpret the actions limiting damage and loss in disasters	**(8)** Ability to make decisions about actions limiting damage and loss in disasters
Response	**(9)** Ability to access information about fast and effective responses to disasters in time	**(10)** Ability to derivate meaning and understand fast and effective response activities to disasters in time	**(11)** Ability to appraise and interpret the fast and effective response activities to disasters in time	**(12)** Ability to make decisions about fast and effective interventions in disasters in time
Recovery/ Rehabilitation	**(13)** Ability to access information on remedial actions	**(14)** Ability to derivate meaning and understand recovery/ rehabilitation knowledge	**(15)** Ability to appraise and interpret recovery/ rehabilitation practices	**(16)** Ability to make decisions about using the knowledge of recovery/ rehabilitation practices

cope with disaster in all of its phases. The disaster health literacy definition of Seifi et al.[23] emphasizes the ability to examine and use health information to evaluate a health care system without stressing the time of disaster. These definitions are generally insufficient to deal with all phases of disaster and address the adequacy of literacy. In general, disaster literacy definitions are found to be encompassing a range of individual cognitive skills and competencies applied in the context of risk prevention.

In this study, it was found that a definition of disaster literacy, revealing the 4 phases of disasters and the essence of literacy, was made by Brown et al.[19] The relevant authors state that they adapted this definition from 2 widely accepted health literacy definitions.[19] However, it is seen that disaster literacy remains at an individual level in the related definition and that there is no emphasis on disaster literacy being a lifelong process. For this reason, a comprehensive definition of disaster literacy was emphasized in the content by focusing on the facts that expressed disaster literacy with relation to disaster information, literacy areas, disaster dimensions, and lifelong actions that targeted the community level and the capacity of the individual. This definition also includes a public health perspective because disasters cause illness and injury to the individual. The disaster cycle is also used as prevention, preparedness, response, recovery, and rehabilitation.[27] Because the concept of prevention is accepted as another expression of the mitigation concept in the disaster cycle,[28] the concept of mitigation/ prevention was used in the definition. Similarly, because the recovery and rehabilitation periods in the disaster cycle are post-disaster studies, these concepts were combined and the traditional disaster stages of Carr[29] were used.

It is stated that disaster literacy is affected by some factors in the 2 studies.[19,20] In line with these antecedents, studies that may be indirectly associated with disaster literacy state that socio-economic characteristics affect individuals' vulnerability level[30,31] and the cultural environment's ability to read and write disaster information.[32]

In terms of the consequences of disaster literacy, Kanbara et al.[20] attaches importance to safety, health, and cooperation outcomes. By following Paasche-Orlow and Wolf's[33] health literacy studies, Brown et al.[19] claims that disaster literacy consequences are affected by those facts about both the individual (skills and abilities) and the system (rules, guidelines, and traditions prepared for the 4 phases of the disaster). For example, factors that might affect individuals' vulnerability include (1) access and use of state services and local emergency systems with attributions, such as navigation skills and self-efficacy; (2) individuals' interaction with transportation, accommodation, or medical service providers through their knowledge and skills; and (3) the ability to cope with disasters by problem-solving skills with resources, such as media support.

In the research, a new conceptual model was developed by reviewing the current literacy concepts related to disasters. The integrated disaster literacy model consists of the mitigation, preparedness, response, and recovery phases of disasters, and is built on the cycle of competence to access, understand, appraise, and apply disaster information in the context of literacy. Factors that affect the process of processing disaster information are shaped from the inside out. As shown in

the disaster literacy model, it can be said that the public health approach is targeted by extending the concept of literacy from the individual level to the community level.

The field of disaster was expanded to include decision-making, problem-solving, critical thinking, and communicating across a wide range of socioeconomic, cultural, and environmental factors at an individual, family, and community level to recognize danger, to prevent risks, to be prepared for them, and to accelerate recovery. Social and cultural factors that affect the disaster literacy's scope, skills, and its contributions to the individual become specified in various societies, the definition, and concepts – and models of disaster literacy may change over time.

Within the framework of the questions of this research, a few sources were reached in the literature. This situation constitutes a significant limitation for the study.

CONCLUSION

In this paper, a comprehensive definition and conceptual framework of disaster literacy were presented in a comprehensive integrated model. The definition emphasizes the capacity of the individual, areas of literacy, phases of disasters, a lifelong process, and an evolving transformation from the individual level to the social level. Based on the systematic review of the disaster literacy definitions and the conceptualization of disaster literacy, a model that showed the factors affecting disaster literacy and the path leading to its negative consequences was developed. The model in which 16 different disaster information processing processes of disaster literacy are defined consists of the ability to access disaster information and to understand, appraise, and apply disaster information during the mitigation, preparedness, response, and recovery phases of disasters.

With this definition and model, a tool was proposed that would serve as a conceptual basis for the development of responses to improve disaster literacy. Thus, practices special to the phases of disaster can be specified and supported in society. In addition, the model can contribute to empirical studies by providing the basis for the development of tools that measure disaster literacy.

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Supplementary material

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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