

## Review Article

# Disaster Nursing Perspective: Disaster Literacy

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## Abstract

Disaster literacy is the process of understanding, analyzing, synthesizing, and evaluating a disaster problem in detail, and making correct and conscious decisions at the end of the process. Nurses assume important roles and responsibilities at all stages of disasters with their technical skills and knowledge of epidemiology, physiology, pharmacology, cultural-family structures, and psychosocial issues. A disaster literate individual needs to have a basic understanding of their own needs, resources, and vulnerabilities. Attitudes and behaviors of individuals against disasters are an important factor in increasing or decreasing the damage that disasters may cause. It is important to create a disaster literate society to be protected from disasters and to overcome the damages that may come from disasters with as little loss of life and property as possible. In this context, the study aims to discuss disaster literacy within the scope of disaster nursing in the light of current literature.

**Keywords:** Disaster; Nursing; Disaster literacy

## Introduction

Disaster is the result of human, technology-related, or nature-based events that harm all or some of the societies socially, physically, economically, and psychologically, and which must be struggled against to cope [1]. In nature, many events such as earthquakes and landslides occur independently of human presence [2]. World Health Organization (WHO) disaster; is defined as “all kinds of natural, technological or human-induced events that cause loss of life and property for people, affect the society in physical, psychological and economic aspects and cannot be coped with local opportunities” [3]. These events occur naturally and affect human life, leading to natural disasters. Natural disasters have been triggered due to the intense population growth in settled areas in the world, which started in the 20th century. Disasters occur suddenly and unpredictably in any part of the world and are extraordinary natural events that affect the economic and social structures of countries, as well as the loss of life and property [4]. According to 2018 data, 1.3 million people lost their lives as a result of natural disasters between 1998 and 2017, and 4 billion people were directly and indirectly affected by natural disasters [5].

Exposure to natural disasters cause economic, psychological, and sociological problems and consequences [6]. The most devastating result caused by natural disasters is undoubtedly deaths. There is no direct intervention of human beings in the formation of natural disasters [7]. However, natural disaster damage prevention, disaster preparedness, response, and improvement activities can be carried out. This is the knowledge, attitude and behavior, experience, etc. required for individuals and society to survive disasters with the least damage. It is a situation that can be realized with education to create a combination of skills such as [8,9]. Lives face to face with reality without knowing where and when, and which natural disaster will be encountered. All health professionals need to be knowledgeable about disaster management to minimize the effects of disasters on individuals. The high number of nurses among these health workers makes the role of nurses in disaster management even more important.

To minimize the health hazards or life-threatening damages that may occur during and after the disaster, nurses are involved in health management, providing assistance and care throughout the disaster process. For disaster nurses to provide the expected service, they need to know their roles and responsibilities, education, service scope, and many issues about disaster nursing. In addition, all of the nurses' work should include institutional risk assessments, preparation of disaster plans, implementation, evaluation, and updating of these plans. In this case, it is possible to have disaster literacy characteristics and to raise individuals with good disaster literacy qualifications to both to have knowledge about disasters and show the necessary attitudes and behaviors during and after disasters.

## Disaster Literacy and Importance

Disaster literacy is an emerging field of interest for emergency medicine and disaster preparedness. Disaster literacy is defined here as “an individual’s ability to read, understand and use the information to make informed decisions and follow instructions in the context of mitigating, preparing, responding and recovering from a disaster” [10]. Sözcü and Aydimözü (2019a), on the other hand, defined disaster literacy as the process of making correct and conscious decisions at the end of the process by going through the detailed understanding, analysis, synthesis, and evaluation stages of a disaster problem that an individual has or may encounter. Disaster literacy is a way to measure and improve people’s understanding and skills in dealing with disasters. Disaster literacy enables to development of basic knowledge about what disaster is and how to reduce disaster risk. To take precautions before disasters occur, to fight against disasters, and to be protected from all kinds of damage that disasters may cause in the best way, individuals need to be well literate in making healthy decisions and making inferences. Literacy is a powerful, far-reaching life skill that goes beyond traditional concepts of speaking, listening, reading, and writing. A literate individual;

- Accesses, records, develops, and communicates ideas.
- Understands and builds knowledge.

- Gives creative answers to produce works of social, cultural, aesthetic, historical, and economic importance.
- Raises, explores, and responds to local, national, and global issues, issues, and challenges.
- Keeps personal records, understands bureaucratic work and transactions, and can interact with bureaucracy [11].

Individuals who have basic literacy skills should then develop themselves in disasters and become good disaster literate. It is very important to be prepared for disasters and to have the knowledge and capacity to take precautions to protect the lives of the society to reduce the possibility of being damaged by disasters and disaster risks in possible disaster situations. There is a close relationship between being disaster literate and extremely important to be able to make the right decisions during and after the disaster, to show the right behaviors, make quick interventions, and raise awareness about what can be done. Disaster literacy has a very important role in terms of both raising individuals with high awareness and ensuring that those who will be involved in disaster response have sufficient knowledge and experience.

In the international literature, “disaster prevention literacy” [12], “disaster mitigation literacy” [13], “disaster management literacy” [14], Turkey’ It is also expressed by different names in studies such as “natural disaster literacy” [8,9] Disaster literacy, according to Brown et al. (2014), is an individual’s capacity to read, understand and use the information to make informed decisions and follow directions in the context of mitigating, preparing, responding, and recovering from a disaster. Sözcü and Aydinözü (2019a), on the other hand, define disaster literacy as “the combination of various abilities and skills such as knowledge, attitude, and behavior that will enable the individual to react, analyze and evaluate in the face of natural disasters to survive”.

The perspective on disasters is closely related to the disaster literacy level of individuals. To react to any disaster, the individual must first have information about the disaster that has occurred. It is expected that individuals will transform this knowledge into positive attitudes and behaviors that will contribute to both themselves and the society [8]. Gaining disaster literacy to individuals in the society can be beneficial in terms of being prepared for disasters and gaining attitudes and behaviors that should be shown during and after disasters.

A disaster literate individual needs to have a basic understanding of their own needs, resources, and vulnerabilities. Attitudes and behaviors of individuals against disasters are an important factor in increasing or decreasing the damage that disasters may cause. It is important to create a disaster literate society to be protected from disasters and to overcome the damages that may come from disasters with as little loss of life and property as possible. Sözcü (2019) states the characteristics of an individual with disaster literacy as follows:

- Knows nature.
- Has information about disasters.
- Knows how to access accurate, scientific, and reliable information about disasters.

- Knows how to analyze the information about disasters.
- Can take responsible and informed decisions before, during, and after the disaster.
- Is aware of the damages that may be caused by disasters.
- It can generate ideas about protection from disasters, preventing disasters, or reducing the damage of disasters.
- Follows the initiatives and legal regulations on disasters in the country where he/she lives.
- Knows that the struggle against disasters should be on a global scale.
- It can transform disaster literacy into a social culture by transferring the knowledge it has about disasters to others.

We have almost no control over how to recognize and reduce disasters when and where they will occur, and because of this lack of knowledge and skills, their impact can be even worse. For this reason, what we can manage is to gain knowledge, attitudes, and behaviors about how disasters occur, what dangers they create, and how to deal with disasters. Disaster literacy also provides to have knowledge, attitudes, and behaviors related to disasters and these; disaster prevention knowledge, disaster prevention attitude and disaster prevention skills [15]. The first dimension of disaster literacy is knowledge. The knowledge dimension requires knowing the conditions under which disasters may occur, preparation for disasters, information on intervention and participation activities during disasters, and situations that may arise after a disaster. Attitude (affective disposition) is the second dimension of disaster literacy. The attitude dimension, which includes features such as being willing to do a behavior, taking responsibility, and adopting, is necessary for the transition to the third dimension, the behavior. This dimension refers to the transformation of adopted and assimilated information into behavior and advanced natural disaster literacy. Individuals with a framework of knowledge, attitude, and behavior qualify for disaster literacy [9].

## Disaster Nursing and Roles

Disaster preparedness is a process that encompasses risk identification and multi-disciplinary management strategies [16]. In this process, it is critical to respond effectively to the short, medium, and long-term health needs of the society negatively affected by disasters [17]. Nurses have important roles and responsibilities at all stages of a disaster. ICN stated the importance of nurses in disasters: “Nurses can assist in disaster preparedness and preparation with their technical skills and knowledge on epidemiology, physiology, pharmacology, cultural-family structures, and psychosocial issues. As team members, the nurse can play a strategic role in collaboration with health and social disciplines, governmental bodies, community groups, and non-governmental organizations, including humanitarian organizations.” [3,17].

Disaster nursing can be defined as the presence of professional nursing skills in a society whose physical, emotional and health needs are adversely affected by disasters. Kalanlar et al., (2017) on the other hand; disaster nursing; is defined as the activities that should be carried out in cooperation with other fields to use the special

knowledge and skills related to disaster-related nursing activities, systematically and flexibly, and to minimize the wide range of health effects and life-threatening risks of the activities.

The main purpose of disaster nursing is to identify, defend and participate in all disaster-affected communities, ensure their care at the highest level possible, and actively participate in all disaster planning and preparation stages [19]. Nurses are expected to approach disasters by nursing activities such as solving an individual's health problem and providing nursing care, having basic competencies such as critical thinking, evaluation, technical skills and communication [20]. Nursing practices in disasters can be examined under three main headings: pre-disaster (preparation phase), disaster moment (response phase), and post-disaster (recovery period) [21].

**Preparation Phase:** It is the period in which a disaster management plan is made to reduce the possible effects of the disaster before the disaster occurs [22]. The purpose of all activities carried out in this period; is to reduce the risks and effects of disasters in society, thus saving lives [23]. In this process, cooperation of all units and people related to social resources such as hospitals, non-governmental organizations, police, media, firefighters, and rescue teams is required [24]. In planning, it is necessary to clearly define the responsibilities of health care professionals in disasters, to train the personnel before the disaster, develop a disaster communication and response plan, supply the necessary materials in case of a disaster, and determine additional resources for the planning and supply of mobile health services [25,26]. Nurses' responsibilities are very important at this stage, as the preparation stage is the determinant of success in the response and recovery stages of the disaster [27].

Responsibilities of nurses in the preparation phase;

- The formulation of policy on response and recovery should take place,
- Assessing community needs and resources related to health and medical care,
- Participating in planning activities such as communication, coordination and cooperation, equipment and supply needs, training, shelter, first aid stations, and emergency transportation,
- Developing and delivering education to nurses and health professionals and the community,
- Capacity building through the creation and maintenance of a disaster-ready nursing workforce,
- Planning, participation, and evaluation of disaster preparedness studies again, taking into account the situations in the past disasters,
- Collaboration with planners, disaster relief, government agencies, healthcare professionals, and community groups to develop preparedness plan [3],
- Taking a role in the creation of social policies and strategies, institutional, regional, or national disaster plans,
- Evaluating the environment in terms of risks and resources in the nursing services plan,
- Identifying resources such as financial opportunities,

collaborative institutions, workforce and assessment tools and planning their appropriate use,

- The roles of all nurses who will take part in the disaster should be determined,
- Evaluation of personnel needs for the appropriate use of nurse personnel resources,
- Participating in disaster planning studies of the institution, knowing and performing its duties in training, exercises, and organizations,
- Evaluating the public's knowledge of disasters and methods of protection from disasters, together with other health team members,
- Participating in training on personal disaster action plans, first aid, disaster prevention, ways to avoid accidents and infections,
- Collaborating with disaster coordination and civil defense teams and reviewing the disaster plan of the institution and itself [19].

**Response Stage:** The main target at this stage is to provide the necessary support to the disaster victims in the early period and to keep the morbidity and mortality rates that may occur in society at the lowest level [26]. For this purpose, the issues to be focused on are; life-saving, first aid, and emergency response [23]. Immediately after the disaster ends, the rescue forces and the nurse begin to work to save lives. Within the scope of these studies, triage should be carried out by classifying the injured according to their injury types, their current situation, and determining the issues of emergency response, treatment, and evacuation [28]. The purpose of triage is to save the lives of as many people as possible, and from this point of view, nurses and emergency personnel need to know triage strategies. To achieve this, health teams use the disaster triage strategy. However, due to the limited number of studies conducted, there are different results on this subject. In the study conducted by Özdemir and Sarıkamış (2006) in Turkey, it was determined that a very high rate of 83% of the health personnel working in the emergency departments of university hospitals in Ankara did not know triage. The primary objective immediately after triage is the evacuation of the injured from the area. Immediately after the evacuation, nurses and emergency personnel take part in the early diagnosis of infectious diseases in the community by evaluating the current situation and needs of the community, providing shelter, food and water, immunization, health protection, providing psychological support, establishing communication and transport routes, and restructuring [27,29].

Roles and responsibilities of nurses in disaster response;

- Active work in first aid, intervention, and medical rescue activities,
- Contributing to saving lives, reducing losses, injuries, complications, and mortality,
- Use their skills in epidemiology to identify disease patterns to detect the threat of communicable disease or other health hazards, and play a role in communicable disease prevention;
- Collecting information about injuries and diseases seen during the disaster and sending it to epidemiologists for analysis

[3,19],

- Providing physical and mental health care, continuously monitoring survivors for signs of mental health problems, providing care and referral when necessary,
- Identifying chronic disease, disabled individuals, or vulnerable groups, providing care by taking into account the characteristics of these individuals,
- Fulfill the requirements of the task definition in the disaster plan,
- Working in cooperation with humanitarian organizations, health and social disciplines, government bodies, community groups, and non-governmental organizations [3,19],
- Fulfilling their role in the disaster plan to prevent further damage, reduce the effects of the event and improve the well-being of the disaster victims,
- Evaluating the care needs of the society, determining the priorities regarding treatment and care,
- Evaluating the dangers such as nuclear, chemical, and biological contamination possibilities in the disaster area and implementing the necessary initiatives,
- Taking part in the communication between the crime scene and the institution for the coordination of services [19],
- It should determine the needs of care and treatment, check and request medicines and materials that may be necessary.
- Provide psychological support to the affected public or health workers.
- Should perform triage and first aid together with the healthcare team [19].
- In case of an insufficient health care team, he/she should take on administrative duties and attend the required meetings and requests for support.
- Provides psycho-social support, temporary shelter, and preventive health services for people who have to live in tent cities in case of a prolonged period of disaster.
- They participate in emergency care, first aid, health screening, and vaccination activities in temporary health cabins. They carry out studies including primary health care services [19].

**Recovery Phase:** The recovery phase is the restructuring and rehabilitation period in which life begins to return to normal once the first negative effects of the disaster disappear. The main objective of the activities carried out at this stage; is to do all necessary to meet the vital activities of disaster-affected communities at a minimum level, to return the damaged health care system and society to normal as soon as possible, to establish a management plan for possible disasters in the future, to strengthen disaster personnel and society [27,30]. Since this stage includes repairing the devastating effects of the disaster on society, the nurse's role is broader than those in the preparation and response stages [26,30].

Roles and responsibilities of nurses in the post-disaster recovery/

rehabilitation phase

- Carries out the medical and nursing care of individuals who need physical and psychosocial care in case of illness, disability, and injury caused by disasters.
- Continuing to provide care and support to those with physical and mental health needs,
- Supports individuals who are injured, with mental health illness, disability, or chronic illness to receive medical care, and monitors and works to reduce the risk of complications.
- Contributing to the improvement of the health care infrastructure,
- Leading the planning and restructuring activities to ensure that the patient's needs are met,
- Actively participating in follow-up activities including community planning and development, ensuring process evaluation and documentation [3],
- Putting the findings related to the disaster situation in writing after the disaster,
- Reviewing the strengths and weaknesses of the disaster plan and rearranging the disaster plan if necessary [19],
- Identifying ongoing health hazards for the individual, family, and society and ensuring their management in cooperation with other disciplines,
- Ensuring the control of situations that may threaten environmental health (rodents, dead animals, etc.),
- Organizing immunization services in the disaster area,
- Carrying out the functions of food safety and surveillance of diseases,
- Provides support and consultancy services for mental problems (hopelessness, depression, burnout, post-traumatic stress disorder, etc.) [19].

## Conclusion and Recommendations

To be prepared for possible disasters and to get rid of the possible harmful effects of disasters with the least damage, individuals in the society should be equipped with knowledge, attitudes, and behaviors against disasters. Disaster literacy is a set of various skills and basic knowledge that enable the individual to survive during and after disasters, to show correct responses to disasters, and to analyze and evaluate in line with the knowledge they have in this whole process. An inadequate level of disaster literacy poses some risks in terms of preparedness for disasters and terms of individuals and society during disasters. Individuals need to have disaster literacy in terms of preventing disasters and reducing the loss of life and property that may occur in disasters. For this reason, coordination and support of many disciplines are needed in disaster management. Especially nurses, who are one of the health care professionals, have great responsibilities at all stages of disaster management. To create an effective disaster literate society and to carry out disaster preparedness and management, it can be recommended to make an arrangement that includes disaster management in the undergraduate

nursing education of all universities, and to train health services by conducting various certificate programs, in-service training and exercises for employees.

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## References

1. Hamid I, Rahim A R A. Disaster Management Framework. Selangor Science and Technology Review. (SeSTeR). 2020; 4: 1-8.
2. Ruiter M C, Couasnon A, van den Homberg M J, Daniell J E, Gill J C, et al. Why we can no longer ignore consecutive disasters. *Earth's future*. 2020; 8: e2019EF001425.
3. World Health Organization and International Council of Nurses. 2009. ICN Framework of Disaster Nursing Competencies International Council.
4. Henderson L J. Emergency and disaster: Pervasive risk and public bureaucracy in developing nations. *Public Organization Review*. 2004; 4: 103-119.
5. Bronfman NC, Cisternas PC, Repetto PB, Castañeda JV, Guic E. Understanding the Relationship Between Direct Experience and Risk Perception of Natural Hazards. *Risk Analysis*. 2020; 40: 2057-2070.
6. Jogia J, Kulatunga U, Yates G P, Wedawatta G. Culture and the psychological impacts of natural disasters: Implications for disaster management and disaster mental health. *Built and human environment review*. 2014; 7: 1.
7. Wachinger G, Renn O, Begg C, Kuhlicke C. The Risk Perception Paradox—Implications for Governance and Communication of Natural Hazards. *Risk Analysis*. 2013; 33: 1049-1065.
8. Sözcü U. ve Aydinözü D. Examining the natural disaster literacy levels of pre-service teachers according to some variables. *International Journal of Geography and Geography Education (IGGE)*. 2019a; 40: 79-91.
9. Sözcü U. ve Aydinözü D. Examining the achievements related to disasters in the curriculum in the context of natural disaster literacy. *Turkish Studies-Educational Sciences*. 2019b; 14: 2639-2652.
10. Brown LM, Haun JN, Peterson L. A Proposed Disaster Literacy Model. *Disaster Medicine and Public Health Preparedness*. 2014; 8: 267-275.
11. ALEA. Literacy in 21st century Australia: the ALEA Declaration. 2015. <https://www.alea.edu.au/documents/item/1196>
12. Rahim N B A. ve Wu B S. Disaster prevention literacies: Assessing the knowledge, skills and attitude of Taiwanese students for an earthquake disaster. *HSSE Online*. 2015; 4: 30-40.
13. Priyowidodo G. ve Luik J E. Communicating disaster mitigation literacy to coastal communities in Pacitan Indonesia. *American International Journal of Research in Humanities, Arts and Social Sciences*. 2014; 5: 245-248.
14. Kimura R, Hayashi H, Kobayashi K, Nishino T, Urabe K, Inoue S. Development of a "Disaster Management Literacy Hub" for Collecting, Creating, and Transmitting Disaster Management Content to Increase Disaster Management Literacy. *Journal of disaster research*. 2017; 12: 42-56.
15. Chung, Sung-Chin ve Yen, Cherng-Jyh. Disaster prevention literacy among school administrators and teachers: a study on the plan for disaster prevention and campus network deployment and experiment in Taiwan. *Journal of Life Sciences*. 2016; 10: 203-214.
16. Aras M, Mumcu A, Karabey T. Determination of Disaster Awareness Levels of Health Sciences Faculty Students. *TOGU Journal of Health Sciences*. 2021; 1: 40-49.
17. ICN. Nurses and disaster preparedness. Geneva: International Council of Nurses. 2006.
18. Kalanlar B. *Disaster Nursing*. Hacettepe University Press. Ankara. 2017.
19. Bayraktar N, Totur Dikmen B. *Nursing in Disasters*. Öztekin SD, editor. *Disaster Nursing*. Ankara: Turkey Clinics. 2018; 1-7.
20. Kalanlar B, Kubilay G. An Important Concept in the Protection of Community Health in Disasters: *Disaster Nursing*. *Florence Nightingale Journal of Nursing*. 2015; 23: 57-65.
21. Demirbaş H, Sezer A, Ergun A. The Role and Responsibilities of the Public Health Nurse in Disaster Management. *Florence Nightingale Nursing journal*. 2013; 21: 122-128.
22. Beachley M. *Nursing in a disaster*. Smith, C.M., Maurer, F.A. (Ed.). *Community Health Nursing Theory and Practice*, 2nd ed., Saunders Company, United States. 2000; 424-444.
23. ICN (2009). Disaster planning and relief, [http://www.icn.ch/images/stories/documents/publications/fact\\_sheets/5a\\_FSDisaster\\_Response.pdf](http://www.icn.ch/images/stories/documents/publications/fact_sheets/5a_FSDisaster_Response.pdf) (04.25.2011).
24. Truglio-Londigan M, Lewenson B S. Nursing education and public health nursing, *Public Health Nursing: Practicing Population-Based Care*, Jones and Barlett Learning, United States, 359-382, <http://books.google.com/books> (01.05.2011). 2010.
25. Çakmak H, Aker AT, Can Öz Y, Er Aydin R. Determination of the impact of the Marmara earthquake and preparedness for the possible disaster of the personnel working in the 112 emergency aid units in Kocaeli province. *Academic Journal of Emergency Medicine*. 2010; 2: 83-88.
26. Hasmiller S B. *Disaster*. Staphone M, Lancaste J, Thomas L. *Foundation of Nursing in The Community Oriented Practice*, 2nd ed., Mosby, China. 2006; 255-272.
27. Putra A, Petpichetian W, Manewat K. Rewiew: Public health nurses' roles and competencies in disaster management. *Nurse Media Journal of Nursing*. 2011; 1: 1-14.
28. Olgun N, Kuğuoğlu S, Eti Aslan F. *Triage: Determining priorities in emergency care and the importance of pediatric triage*, Şelimen, D. (Ed.), *Emergency Care*, Extended 3rd Edition, YüceYayın, İstanbul. 2004; 59-86.
29. Powers R. Introduction to disaster and disaster nursing. Daily, E. (Ed.), *International Disaster Nursing*, Cambridge University Press, New York, 1-12, <http://books.google.com/books> (17.03.2011). 2010.
30. Basavanhappa BT. *Disaster Nursing*. *Community Health Nursing*, 2 nd ed., <http://books.google.com/books> (12.03.2011). 2008.