

Nursing Services in Kahramanmaraş Earthquakes in Türkiye: A Needs Analysis

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Abstract

The injuries that occurred in earthquakes caused an accumulation in hospitals and the need for health services increased. The most needed human resource in the provision of health services in disasters is nurses. The aim of this study is to determine the scope of nursing services in earthquakes and to identify the service needs in hospitals during the February 6 earthquakes in Turkey. In this study, Delphi technique was used for needs analysis. The managers of health institutions in 11 provinces that experienced the earthquake were interviewed to determine how nursing services are carried out during earthquakes. As a result of this study, it was determined that there were inadequacies in triage, identification of earthquake victims, medical intervention and keeping records, identification of deceased earthquake victims, storage of personal belongings, communication with relatives of earthquake victims, and psychosocial support services in disasters such as earthquakes where many people were seriously injured. It has been observed that there is a need for disaster nurses and forensic nurses to work in these areas and it is thought that these 2 nursing fields should be taken into consideration in the planning of health professional resources in disasters.

After the earthquakes that occurred in Kahramanmaraş on February 6, 2023, which affected 11 provinces and many settlements, many injured people were brought to hospitals in these regions, more than 50 000 deaths occurred, and health services were needed more than ever. In order to ensure that people living in disaster areas are affected as little as possible by disasters, it is necessary to prepare management plans before the disaster and to implement the plan prepared during and after the disaster.¹ Disasters are multidimensional and complex phenomena, where solutions must be found using existing resources, where sensitivities arise due to natural or man-made threats, and where people are exposed to situations. They are public health problems with a broad impact, affecting large numbers of people and the living environment, disrupting the hierarchy of basic human needs and causing physical, social, emotional, and environmental damage in a short space of time.²

Disaster preparedness is a process that involves risk diagnosis and multidisciplinary management strategies. It is essential to respond effectively to the short, medium, and long-term health needs of disaster-affected societies.³ Nurses are health professionals who have been active throughout history in disasters such as wars, earthquakes, floods, fires, and epidemics. The development of modern nursing has also been linked to the provision of nursing services in disaster situations.⁴ Disaster nursing can be defined as the provision of professional nursing skills to communities with physical, emotional, and health needs who are adversely affected by disasters. It has been observed that nurses work in a wide range of areas such as disaster search and rescue, registration and triage, treatment, support of disaster victims and their families, identification of the deceased and rehabilitation of disaster workers, first aid, advanced clinical care, and interventions for physical and mental health needs in times of disaster.

It is well known from the literature that medical and nursing interventions are provided at maximum levels. In assessing the scope of disaster nursing, services such as first aid, post-traumatic treatment, and psychological support have been defined. It is also known that the scope of disaster nursing includes triage, treatment, and emotional support and services related to rehabilitation of the injured.^{1,5} On the other hand, services such as identification of traumatized disaster victims and identification of the dead are included in the scope of forensic nursing services. In the acute post-disaster period, physical, psychological, and emotional trauma may be experienced by people in temporary shelters and field hospitals. These people include neglected or abandoned persons, unidentified people, children, the elderly, and the injured. Studies have reported that there will be a need for professionals to work to prevent the legal consequences that may occur and to meet these needs.⁶ In this respect, forensic nursing is a discipline that ensures the advancement of scientific knowledge needed before, during, and

after the event in disaster situations. In this complex context, the forensic nurse will be able to develop various actions and contributions that support the urgent need to generate knowledge and define competences in order to contribute to the advancement of scientific knowledge and the strengthening of expertise in the pre-incident, incident, and post-incident phases, especially in disaster situations.⁷ The first 24 and 72 hours after a disaster are considered critical hours until aid arrives.⁸ The coordination of problems that arise in the acute period, such as the identification of earthquake victims in hospitals, registration procedures, communication with family relatives, identification of orphaned children, storage of valuables, and the lack of responsible persons to fulfill these tasks, has further complicated activities of health institutions. In addition, there is a requirement for physicians and other health professionals who intervene for earthquake victims to provide health services to the patient within the framework of ethical principles and legal intervention. It is known that there are problems in the services that fall within the field of forensic and disaster medicine, such as the triage, identification of earthquake victims, recording of interventions, identification of orphaned earthquake victims under the age of 18, and receiving and storing the valuables of earthquake victims and the dead, which is a legal and professional responsibility in a busy and chaotic environment.⁹

The aim of this study is to determine the need for special nursing services in earthquake victim registration and other procedures in earthquake zone hospitals within the first 72 hours after the earthquake.

Material and Methods

This study was carried out in order to determine the problems that arise in the execution of procedures such as triage, emotional support, and disaster victim identification of the hospitals in the earthquake zone within the first 72 hours and the need for human resources to work in this field with the Delphi Technique.

Delphi Technique

The Delphi Technique is based on the principle of asking questions about a topic and summarizing the feedback received from several experts in order to identify shortcomings and areas for improvement as a result of a higher level of expert observation of the subject under study. It was first used in the 1950s by examining a group of expert opinions in military defence and security projects.^{10,11} It is defined as the glazing and tour of ideas consisting of expert feedback. It is used in various fields such as science, politics, and economics. A publication reviewing studies using the Delphi Technique reported that it was used methodologically in 230 thousand articles.^{12,13}

Delphi is the joint opinion of a group of experts on a topic using a rational and written approach. It attempts to derive a common opinion from at least 9-10 independent and related expert opinions. It is used for planning programs, developing policies, forecasting events and trends, and setting standards.¹⁴ The Delphi Technique is a technique that involves gathering opinions on a complex problem.¹⁵ In order to apply the Delphi Technique, it is necessary to form a research group, create a research questionnaire, conduct a preliminary trial, reach the relevant managers, receive answers in the first period, prepare questions in the second period according to the answers, ask these questions, and analyze the data.¹⁶ Reasons for

choosing the Delphi Technique are to benefit from the experience and foresight of the managers of the hospitals actively working on the subject and to reach a consensus on determining the needs and increasing the quality of the service provided.¹⁷

In this study, In Türkiye, 11 provinces affected by the earthquake (Kahramanmaraş, Hatay, Adıyaman, Malatya, Adana, Gaziantep, Şanlıurfa, Osmaniye, Diyarbakır, Kilis, and Elazığ) were included in the scope of the research. The hospitals included in the study are public and university hospitals with an average bed capacity of 500-750. Hospitals that were not damaged in the earthquake and had the highest capacity for the injured were included in the study. It has been reported that the average number of patient applications in the first 72 hours was 10 000 in the provinces where the earthquake was most intense and between 500-3000 in other provinces. The research group was formed with the inclusion of the manager of a selected hospital in these provinces. In the selection of hospital managers, hospitals which served the highest number of earthquake victims within the first 72 hours were preferred. A total of 11 managers formed the research group. There were 10 managers who are female, and 1 who is male. The years of employment as a manager range from 1-5 (average 3.2) years. Their mean age was 42.3±5.4. All of the managers worked in the field of health care services.

It was planned to create a 3-stage Delphi tour. A questionnaire was created as a data collection tool before the Delphi technique. The questionnaire asked what was the problem experienced in the first 72 hours related to nursing services (treatment and intervention, patient care, patient registration and identification, psychosocial support). Managers were invited by researchers. Face-to-face meetings by researchers were held with the managers. Research questions were asked in writing and answers were received in writing. In the first round, the problems identified by each manager were listed. In line with the information received from the managers, the second round was started. After the first round of questions was analyzed, the second round of questions was prepared and discussed with the managers again. In the second round, questions were asked about the human resources that manage these processes. Due to the high consensus in both rounds, there was no need for the third round.

In the first round, the top 10 issues listed were reported by all managers involved in the study. Therefore, there was no need to score the problems. As the second period question, the question of who carried out these transactions was asked. The obtained data were evaluated and thematically analyzed by the researchers. Following evaluation of the interview material, analysis in the study focused on what the hospital managements expressed about nurses' roles after earthquake and was extended into a close reading to extract themes relating to health services interrupted with in the first 72 hours and the relationship of these services to nursing roles.

Nursing Services After Disaster in Türkiye

In Türkiye, "Law on the Organization and Duties of the Disaster and Emergency Management Presidency," dated May 29, 2009 and numbered 5902, the "Disaster and Emergency Management Presidency (AFAD)," was established under the Prime Ministry to carry out services related to disasters, emergencies, and civil defense. In Türkiye, nurses can participate in various search and rescue organizations as well as continue to provide health services in the institutions they are assigned to in case of disasters. Although there is no special employment area in the field of disaster nursing in Turkey,

disaster nursing training is carried out within the scope of public health nursing. Disaster nursing does not have a separate job description. In addition, forensic nursing education in Turkey is available at the master's or doctoral level following a 4-year undergraduate education. There are course programs in the field of forensic nursing. Nurses who successfully complete these courses are given a forensic nursing certificate. Forensic nurses also have important roles and responsibilities. The high number of injured and disaster victims in disasters, the collapse of systems due to disasters, traumas that make it difficult to identify individuals, and the absence of relatives and relatives of disaster victims make identification and registration difficult for victims of disasters.^{18,19}

Results

The problems identified by each manager were examined one by one and the problems that the managers in the research group agreed on were listed. It was determined that there were serious problems in the first 72 hours when the earthquake victims came to the hospital intensively, and the triage and registration personnel were insufficient in the detection of earthquake victims.

Main Problems Experienced in Earthquake Zones (First Round)

1. Identification procedures of earthquake victims
2. Identification and storage of earthquake victims' belongings before medical intervention for earthquake victims
3. Communication with relatives of earthquake victims
4. Keeping records of orphans and earthquake victims under the age of 18 and reporting them to judicial authorities
5. Identification of deceased earthquake victims
6. Registration of deceased earthquake victims
7. Identification and storage of belongings on the deceased earthquake victim
8. Communication with the family relatives of the deceased earthquake victim
9. Morgue transfer and notification to the relevant authorities
10. Providing psychological and emotional support to all earthquake victims

Personnel Who Perform These Duties (Second Round)

1. Triage officers (according to regulations)
2. It has been reported as registration personnel. However, they could not be identified and could not be made within the first 24-72 hours due to the collapse of the victim registration systems.

Discussion

It is known that within the first 72 hours after the Kahramanmaraş earthquakes, medical diagnosis and treatment were carried out in hospitals on site and on time, and patient transfers were carried out successfully.²⁰ However, patient registration, identification and records of interventions, and psychological and emotional support services were determined to be difficult services to carry out within the first 72 hours. It is included in the Hospital Disaster and Emergency Plans¹⁷ (HAP) Implementation Regulation published in the Official Gazette dated March 18, 2020 and numbered 31 072 regarding disaster victim record keeping for disasters in Turkey. According to this regulation (Item18-1), "In order to prevent

information loss and standardize data recording, all hospitals, 112 Emergency Health Services Stations and UMKE teams will use the triage card determined by the Ministry."²¹ As can be understood from this, the triage officer is responsible for carrying out the earthquake victim registration procedures.

However, at a time when thousands of disaster victims come to hospitals at the same time and technological systems do not work, it is a difficult task to record all identifications, procedures, and interventions for patients. Moreover, it is not clear by whom these will be done during disasters. Experience has shown that it is not possible for triage officers to fulfill this duty in a chaotic environment within the first 72 hours after the earthquake.

After the earthquake victim is brought to the hospital, procedures such as registration procedures, recording of interventions, identification, registration of valuables, and records of deceased earthquake victims are considered to be medical secretarial duties, but they are under the supervision of nurses and are among their roles within the scope of patient care services. In the literature, intervention tasks such as coordination of the health team, triage, first aid, informing the affected community, and psychological support are within the scope of disaster nursing.²²

In a study conducted using the Delphi Technique during the COVID-19 period, measures to protect the health of health care workers were determined, and with the common ideas of the experts in the research group, it was decided that regulations should be made in areas such as private security areas, improving communication, and providing protective equipment.²³

In this study, it was agreed that the personnel who will take part in the identification of earthquake victims; recording medical treatment interventions; communication with earthquake victims' relatives; reporting orphans, earthquake victims under the age of 18, or the elderly to judicial authorities; identification of deceased earthquake victims; storing personal belongings; and providing psychological support to earthquake victims were insufficient. These services, which are within the scope of nursing services, could not be carried out due to an insufficient number of nurses, but the more important problem was that the need for disaster nursing and forensic nursing in disasters was not known and their job descriptions were not included in the disaster preparedness guides.

In some cases, identification and registration procedures could not be prioritized or carried out during the earthquake. Due to the density of earthquake victims who were traumatized in the earthquake and needed treatment, the inability to carry out identification and registration procedures caused significant problems. Forensic situations, such as masses of unidentified dead bodies, the absence and neglect of relatives of children, little support for the elderly and people with special needs, and the lack of structure in health and security services, occur. The need to comply with local, regional, and even national laws; different types of traces; and a decrease in the number of professional and forensic scientists involved in investigating incidents can also have legal consequences.⁶

As a matter of fact, it is known that after the earthquake disaster in 1999 Türkiye, in which thousands of people died, there were great problems in the identification of the victims.^{24,25} In chaotic environments such as earthquakes, the forensic nurse will be able to develop various actions and contributions that support the urgent need to generate knowledge and define competencies in order to contribute to the advancement of scientific knowledge and the strengthening of expertise in disaster situations. The areas determined by the consensus of the managers are within the scope of the working areas of disaster and forensic nurses. In a study conducted in the literature in 2023, information on the competencies of

Forensic Nursing in the context of disasters was included and it was reported that there was a need for studies to determine the scope of the need for forensic nursing. Then, in this study, it was aimed to map the technical and scientific sources of information about Forensic Nursing competencies in disaster situations.⁷ The necessity of the forensic nurse working in synchronization with the disaster nurse is also emphasized.

Disaster preparedness is the process of raising public awareness of the possibility of natural disasters, making pre-disaster preparations and creating plans for rapid response in case of disaster. This process is carried out in order to reduce the effects of disasters, minimize loss of life and material damage, and ensure that society returns to its normal life as soon as possible. Disaster preparedness is possible by having information about the possible effects of the disaster, creating plans for what to do in case of disaster, and implementing these plans.²⁴ In a study on nurses' preparedness for disasters, it is envisaged to make interventions for the factors affecting nurses' perceptions of education and preparedness for general disaster readiness. While there are difficulties even working in general disaster situations, working in a more dramatic and different field, such as forensic nursing, can only be carried out by nurses who are specialized and trained in this field.²⁶ The Committee on the Future of Nursing 2020-2030 recognizes that nurses have an important role in achieving health equity, with nurses being called upon to serve as leaders who can effectively communicate in individual and inter-professional partnerships and in their workplaces. This situation shows that it is inevitable for nurses to branch out in some areas.²⁸ One of the important findings of this study is the need for disaster nursing and forensic nursing in disaster situations.

In a study in which research needs related to disaster nursing were determined using the Delphi Technique, it was found that there was a need to meet the psychosocial needs of disaster victims.²⁹

In the needs analysis conducted in this study, it was determined that registration procedures could not be carried out in hospitals serving the most earthquake victims, and that identification was compromised for unconscious or unrecognizable and/or traumatized individuals, youth under the age of 18, and elderly individuals. The fact that these problems have legal dimensions and that the identification procedures of traumatized or deceased individuals are also within the scope of forensic medicine shows that forensic nurses are needed in disasters. In particular, the identification, recording, and reporting of individuals who cannot be identified will make things easier for individuals looking for their relatives. The lack of identification and records for the families who came out from under the rubble and learned that their children were brought to the hospital caused dramatic events to occur. In addition, this has led to security gaps and ethical problems in hospitals. After the earthquakes in Turkey, there are missing children and dead earthquake victims who cannot be matched with DNA. Even though a year has passed since the disasters, people who cannot even reach the dead bodies of their relatives are suffering. The problems in the records of reported missing children and orphaned children show that there are inadequacies in this area.²⁰ In order to avoid dramatic events, it is necessary to clarify the duties, roles, and responsibilities in the fields of disaster nursing and forensic nursing during disasters. It is also important to include these tasks in preparation guides.

Conclusion

It has been reported that in disasters such as earthquakes, where many people may be affected, medical treatment and care are

provided at an adequate level in the first hours, but there are problems because thousands of earthquake victims enter the hospital at the same time. It has been determined that services, such as patient identification, patient registration procedures, registration of interventions, storage of belongings, registration and notification of orphaned children and the elderly, and psychological support, have been disrupted, and that the most problems exist in these areas. Employing nurses who are experts in the fields of disaster and forensic nursing wherever nurses have roles in disaster areas is an important step in solving these problems.

Limitation. The limitation of this study is that it is included only 11 hospitals and 1 manager in every hospital.

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References

1. AFAD (Disaster and Emergency Management Presidency). 2023. https://www.afad.gov.tr/kurumlar/afad.gov.tr/e_Kutuphane/Planlar/TAMP.pdf Access Date: 04.22.2024
2. International Council of Nurses. Core Competencies in Disaster Nursing. Geneva: ICN. Published 2019. https://www.icn.ch/sites/default/files/inline-files/ICN_Disaster-Comp_Report_WEB.pdf Access Date: 04.12.2024
3. Yelken N, Tunali N, Gültekin G. Status of forensic Nursing in Turkey. *Sted*. 2004;13(5):171. <https://www.ttb.org.tr/STED/sted0504/adli1.pdf>
4. Şimşek P, Gündüz A. Disaster nursing in Turkey. *Journal of Uludağ University Medical Faculty*. 2021;47(3):469–476. <https://doi.org/10.32708/utfd.981301>
5. Valentine JL, Sekula K, Lynch V. Evolution of forensic nursing theory-introduction of the constructed theory of forensic nursing care: a middle-range theory. *J Forensic Nurs*. 2020;16(4):188–198. <https://doi.org/10.1097/JFN.0000000000000287>
6. Williams J, Williams D. Multi-casualty Scenes. In: *Forensic Nursing Science*, Lynch VA and Duval B, Eds. Elsevier Health Sciences;2010. 168–176.
7. Silva TASMD, Haberland DE, Kneodler TDS, et al. Forensic nursing competencies in disasters situations: scoping review. *Revista da Escola de Enfermagem da USP*. 2023;57:e20220486. <https://www.scielo.br/j/reesp/a/QBfVKjysqTRN3YY3ybsf8rQ/?lang=en>
8. Alim S, Haryanti F, Subandi A, et al. Training on modified model of programme for enhancement of emergency response flood preparedness based on the local wisdom of Jambi community. *Jambá. J Disaster Risk Stud*. 2019;11(1):1–9. <https://hdl.handle.net/10520/EJC-1d20811208>
9. TTB Report of Turkish Medical Association. Published 2023. Accessed https://www.ttb.org.tr/userfiles/files/ttb_deprem_ikinciay_raporu.pdf
10. Keil M, Lee HK, Deng T. Understanding the most critical skills for managing IT projects: a Delphi study of IT project managers. *Inf Manag*. 2013;50(7):398–414. <https://doi.org/10.1016/j.im.2013.05.005>
11. Kauko K, Palmroos P. The Delphi method in forecasting financial markets-An experimental study. *Int J Forecast*. 2014;30(2):313–327. <https://doi.org/10.1016/j.ijforecast.2013.09.007>
12. Rundgren SC, Rundgren C. What are we aiming for? A Delphi study on the development of civic scientific literacy in Sweden. *Scand J Educ Res*. 2016;61(2):224–239. <https://doi.org/10.1080/00313831.2015.1120231>
13. Grisham T. The Delphi technique: a method for testing complex and multifaceted topics. *Int J Manag Proj Bus*. 2009;2(1):112–130. <https://doi.org/10.1108/17538370910930545>
14. Rouda RH, Kus ME. Needs Assessment the First Step. Development of Human Resources, Part 2. Web: 19; Published 2008. http://alumni.caltech.edu/~rouda/T2_NA.html

15. **Turoff M, Linstone HA.** The Delphi Method-Techniques and Applications. Published 2002. <http://is.njit.edu/pubs/delphibook/>
16. **Fowles J.** *Handbook of Futures Research*. Connecticut: Greenwood Pres; 1978.
17. **Şahin AE.** Delphi technique and its use in educational research. *Hacettepe University Journal of Education Faculty*. 2001;20:215–220. <https://dergipark.org.tr/en/download/article-file/87971>
18. **Eşiyok B, Hancı H, Özdemir Ç,** et al. Forensic nursing. *Sted*. 2004;13(5): 169–171. <https://www.ttb.org.tr/STED/sted0504/adli.pdf>
19. **Çevik SA, Başer M.** Forensic nursing and work areas. *Health Sci J*. 2012;21(2):143–152. <https://dergipark.org.tr/tr/download/article-file/693363>
20. **HASUDER.** Public Health Association. Published 2023 <https://hasuder.org/Duyurular/EkIndir/38df2904-d548-1df3-73df-3a098be7d1cf>
21. **HAP.** Hospital Disaster and Emergency Plans (2020). Published 2020. <https://www.resmigazete.gov.tr/eskiler/2020/03/20200318-2.htm>
22. **Grochtdreis T, de Jong N, Harenberg N,** et al. Nurses' roles, knowledge and experience in national disaster pre-paredness and emergency response: a literature review. *South Eastern European Journal of Public Health (SEEJPH)*. 2016;7(1):1–19. <https://doi.org/10.4119/seejph-1847>
23. **Lee SH, Noh JW, Kim Y,** et al. Expert consensus on measures to promote physical and psychological health among COVID-19-related healthcare workers in Korea using Delphi Technique. *Infect Chemother*. 2022;54(2): 247–257. <https://doi.org/10.3947/ic.2021.0137>
24. **Kara U.** *Disaster Victim Identification; Disaster Victim Identification: Organization of Forensic DNA Laboratory in Possible Istanbul Earthquake and Role of the Forensic Geneticist* [master's thesis]. Istanbul University Forensic Medical Institute, Istanbul; 2013. <https://acikbilim.yok.gov.tr/handle/20.500.12812/633275>
25. **Afşin H, Karadayı B.** Importance of dental records in disaster victim identification. *B Legal Med*. 2012;17(2):31–37. https://cms.adlitipbulteni.com/Uploads/Article_44364/TBLM-17-31.pdf
26. **Rañeses MK, Chang-Richards A, Richards J,** et al. Measuring the level of disaster preparedness in Auckland. *Procedia Engineering*. 2018;212: 419–426. <https://doi.org/10.1016/j.proeng.2018.01.054>
27. **Erkin Ö, Aslan G, Öztürk M,** et al. Nurses' General Disaster Preparedness Status and Affecting Factors. *Forbes Journal of Medicine*. 2023;4(3). <https://doi.org/10.4274/forbes.galenos.2023.32659>
28. **National Academies of Sciences, Engineering and Medicine (NASEM).** *The Future of Nursing 2020–2030: Charting a Path to Achieve Health Equity*. The National Academies Press; 2021. <https://doi.org/10.17226/25982>
29. **Ranse J, Hutton A, Jeeawody B,** et al. What are the research needs for the field of disaster nursing? An International Delphi Study. *Prehosp Disaster Med*. 2014;29(5):448–454. <https://doi.org/10.1017/S1049023X14000946>.