

## Original Article

# Developing an Accreditation Model for Disaster Management in the Primary Health Care System of Iran

Masoumeh Ebrahimi Tavani<sup>1</sup>, Esmail Moshiri<sup>2</sup>, Farid Gharibi<sup>2\*</sup><sup>1</sup>Academic Research Staff, Quality Improvement, Monitoring and Evaluation Department, Center of Health Network Management, Deputy of Public Health, Ministry of Health and Medical Education, Tehran, Iran<sup>2</sup>Social Determinants of Health Research Center, Semnan University of Medical Sciences, Semnan, Iran\*Corresponding author: Farid Gharibi, Email: [gharibihsa@gmail.com](mailto:gharibihsa@gmail.com)

## Abstract

**Background:** Disaster management is one of the primary health care (PHC) areas of Iran, and it is becoming increasingly important due to continuous disasters. Accordingly, this study aimed to develop a national accreditation model for disaster management in Iran's PHC system.

**Methods:** The primary model was extended by reviewing the literature/documents and organizing specialized interviews with the experts. Then, the Delphi technique was used to reach a consensus among experts on the intended model. Subsequently, the primary standards were assessed from experts' perspectives based on "importance" and "feasibility" criteria on a 9-point scale. In two rounds of Delphi, 14 out of 16 experts completed the questionnaires.

**Results:** The final developed model emphasized providing required resources, enhancing the preparedness of health centers and households, taking appropriate actions in three phases of disaster, and evaluating the disaster management program.

**Conclusion:** Considering the strong consensus among experts on the Delphi stage, the expanded model can improve disaster management performance.

**Keywords:** Accreditation, Disaster management, Model

Received: March 10, 2026, Revised: April 15, 2026, Accepted: May 27, 2026, ePublished: June 30, 2026

## Introduction

In the current era, the increasing production of greenhouse gases has led to global warming and, consequently, climate and ecological degradation. These changes have caused extensive disasters, such as floods, tsunamis, abnormal and destructive precipitation, landslides, and the like; thus, every year, human beings are exposed to negative human and financial consequences worldwide (1-3). Disaster conditions refer to disruptions in the performance of a community due to natural or man-made disasters, so controlling the above-mentioned situation is beyond society's ability and requires external assistance (1, 4).

Iran's unique climate has made it one of the most crisis-stricken countries of the world. Out of the 40 types of natural disasters registered worldwide, 31 are fatal and are occurring in our country. According to available statistics, more than 120,000 people have been killed due to these crises in Iran in the past 90 years, and, on average, there are 5,000 deaths and injuries of thousands of people, as well as financial losses of more than 100 billion tomans (5, 6). It should be noted that Iran is the fifth most prone to natural disasters in Asia and the tenth most in the world, resulting in a 6% share of accidents in Iran and worldwide (7).

In the meantime, the importance of health centers in assisting the community in crisis prevention and

management is no longer negligible to anyone because these centers are considered the focal point of preventive and relief efforts (8, 9). Therefore, health centers need a comprehensive scientific program to manage potential emerging disasters (10). Given that the preparedness of health centers in the event of a crisis will reduce human and financial losses, technical and operational capacities of these centers will be vital. Accordingly, investment in promoting the safety of health centers and increasing the knowledge and skills of their employees has received considerable attention worldwide (11, 12).

According to statistics, more than 90% of health centers, including hospitals, pharmacies, primary health care (PHC) centers, and even crisis management centers, were seriously damaged in the Indian tsunami (2004), so that they could not provide their medical services. In addition, these centers lost their health personnel due to severe injuries or inactivity (13). Studies regarding the level of readiness of (PHC) centers in Iran suggest that these centers have neither the structural and even functional skills to manage disasters, nor do they have sufficient safety. Moreover, these centers do not have the appropriate management and operational capability at different stages of a disaster, before, during, and after the disaster (14).

Nowadays, accreditation is a method for improving



the quality and safety of healthcare and medical care, which is critical to disaster management. It is an approach through which a provider of health services is assessed based on excellent and up-to-date standards and by their peers. In health organizations, this method contributes to enhancing the quality of health services, improving healthcare management integrity, establishing a database of health services organizations, increasing safety and reducing risks to patients and employees, providing education and advice to health services organizations, and reducing costs by focusing on increasing the efficiency and effectiveness of services (15, 16).

Accordingly, similar to many other health systems, the health system of Iran has been developing an accreditation model for health care and incorporating assessment standards related to disaster management. It is noteworthy that this model is specific to the hospital, and disaster management standards are limited to the readiness of the hospitals and have been neglected to ensure preparedness at the community level. In fact, most people in the community use outpatient care, especially PHC, far more than hospital care. Hence, the need to address the crisis management issue in these areas is evident. Additionally, although the disaster management domain, "health management in disaster status", is one of the main twelve areas in PHC, no comprehensive and effective accreditation model has been defined for its correct and scientific evaluation. Accordingly, the present study has been designed to develop a national accreditation model for disaster management in the field of PHC in Iran.

## Materials and Methods

Undoubtedly, establishing excellent standards in the accreditation model is considered the main factor encouraging health organizations to improve their performance during accreditation (17). These standards provide a framework for the self-assessment of health centers and a basis for judging the performance of health centers in different areas (18). Therefore, the first and most crucial step in accreditation is the development of scientific, efficient, and evidence-based standards that address all aspects of performance and associated processes (19). Hence, there is an urgent need for strong standards with appropriate measures that can distinguish between different functional levels and have enough sensitivity to identify weak clinical and organizational processes (20). In addition, these standards should be relevant, understandable, measurable, valuable, and achievable (18).

Given the wide diversity in the nature and structure of health services provided across different countries and the unique needs and goals of various communities, each country must develop its methods for developing accreditation standards (21). Nevertheless, the key factor is that acceptance and efficacy will be enhanced when adherence to accrediting criteria closely aligns with the community's requirements, leading to higher success throughout the implementation stage (19). Therefore,

measuring the necessity of a standard in an accreditation model and assessing its ability to execute in a target society can be valuable measures to ensure the success of accreditation models (22-24).

The Delphi technique is frequently used to confirm the compliance of accreditation standards with a specific field. It is an effective method that can assess the initialized standards based on criteria such as importance and ability to execute from the experts' viewpoints and significantly increase the probability of future success of the accreditation model in real implementation (25). This technique aims to utilize the positive features of group interaction and avoid negative aspects that relate to the social problems of these groups, including the intellectual group. Accordingly, the Delphi technique achieves its goals with essential features, such as namelessness or anonymity, repetition and recitation, controlled feedback, and statistical aggregation of responses (25).

Thus, the research team, has developed primary accreditation standards and related measures through using the available scientific documentation on the disaster management field in Iran's PHC, holding numerous meetings with experienced people in this field, and employing authoritative scientific texts. Subsequently, all the standards and measures developed for Delphi's first round of questionnaires were evaluated by experts based on two indicators of importance and feasibility on a 9-degree scale. However, the implementation of the Delphi technique requires the participation of at least ten audiences (25, 26). Nonetheless, in this study, 16 experts with PhD degrees in health service management, disaster management, and health policy participated in the Delphi phases. The designed questionnaires were presented to experts through presenting the available materials and e-mailing them to experts in other states. After analyzing the results of each stage, the questionnaires were prepared and presented to the experts. This work continued until the final agreement and consensus on the standards were reached.

In the analysis section of the questionnaire, the median index was the basis for the mid-term failure of unconventional responses. Therefore, after collecting the questionnaires, the standard was excluded from the study if the median response score was between 1 and 4. However, if the median index score was 4-7, the standard was accepted into the next round, and the standard with a score higher than 7 was approved at the same stage and entered the final model (27). Another important point in this section of the study is to provide feedback on the results obtained from previous rounds by the entire group of experts (the total average), as well as the individual scores assigned to each standard. It is noteworthy that this approach encourages deeper reflection on the areas for assessment and modification, making adjusting the rating more desirable. Moreover, the consensus process will be such that if the change in the rates provided by the experts in two consecutive rounds of the study for each question is less than 15% of the total average score, then that standard

has been agreed upon, and there is no need to enter the next Delphi's step (28).

## Results

As mentioned earlier, the Delphi technique has anonymity, repetition and retelling, controlled feedback, and statistical aggregation of responses until consensus. Anonymity is generated by collecting data from the questionnaire, leading to a loss of social pressure that may distract and disrupt the respondent's response. Further, this feature preserves the vote's independence and the scholars' views because they can express their beliefs freely without being pressured by other contributors and present their opinions solely based on the value and merit of the intended component. Additionally, experts can alter their comments at their discretion without compromising their integrity or dignity. It should be noted that repeating the questionnaire by multiplying it by contributors in successive sequences allows respondents to modify and comment (25).

Moreover, controlled feedback varies among drivers to ensure that participants understand each other's points of view. The feedback is that the participants receive a simple summary of the total number of comments (as an example, in the form of a mean, median, or moderate score), though discussions and exchanges of comments may also be presented as feedback. Hence, all participants, but not just full-time contributors, can find an equal opportunity to comment, and there is no overwhelming presence of one or more contributors (25). Finally, the statistical aggregation of responses from contributors' views is presented in the middle form and used as a basis for consensus (25, 29).

In general, seven basic standards with 149 related measures were obtained based on the review of the resources and the initial source for the design of the accreditation model in this area. The titles and dimensions of these standards focus on different areas, including "supplying resources needed to provide services related to disaster management quantitatively and qualitatively", "assessing and promoting vulnerability of health centers", and "assessing and improving preparedness of households and public places against disasters". The other areas were "implying proper measures in the pre-disaster phase", taking appropriate measures during the disaster, "taking appropriate measures in the post-crisis, and "monitoring effectiveness of disaster management programs and activities".

In Delphi's first round, a questionnaire with 151 measures in seven of the main standards was presented to 16 Iranians who were experts in the main departments of health medicine of the country's medical sciences in the field of crisis management. Overall, 14 of them completed and sent the questionnaires (the response rate was 87.5%). After performing the necessary analyses on the methodology, 143 were approved based on the importance of the minimum score of 7 in both dimensions and the measure's feasibility. Six measures were based

on a score of 4–7 in one or both, the importance and the ability to execute into the second round, while 2 measures were excluded from the study because they did not score less than four. In the second Delphi, six datasets were sent back to the experts, and with all the experts (a 100% response rate), the total score assigned to them, in addition to the score assigned to each expert, was reported to them separately. At this stage, the experts rescaled the scales, ensuring that all standards received the necessary approval level. Moreover, the qualitative points mentioned by the experts were applied to the written and content dimensions of the standards and measures to ensure their full quality. The approved final standards and measures, their confirmation, and the final median score are provided in [Supplementary file, Table S1](#).

The issue of "taking appropriate measures in the pre-crisis phase" was the most significant among the various dimensions, with an average score of 8.89 for its measures. On the other hand, "taking proper measures at the stage of occurrence crisis" had the lowest score, with an average score of 8.32 for its measures. Based on the results, the dimension of "assessing and improving the preparedness of health centers" had the highest average score of 8.07 for its measures in the final model's performance capability. Conversely, the dimension related to "investigating the effectiveness of the activities and crisis management-related programs" demonstrated the lowest average score of 11.7 for its measurements. Ultimately, the average total score for all measures was determined to be 8.84 and 7.26, respectively, for the two criteria of importance and capacity to perform.

## Discussion

This study developed a national accreditation model for crisis management in Iran's PHC field. The final model expanded during the study included seven core standards, including "supplying resources needed to provide services related to disaster management quantitatively and qualitatively", "assessing and promoting health center preparedness", "assessing and improving preparedness of households, and places public against disasters", "taking appropriate measures in the pre-disaster phase", "taking proper measures during the disaster", "taking proper measures in the post-disaster period" and "investigating the effectiveness of disaster management programs and activities".

The first standard of this model, which relates to the resources needed to perform crisis-related activities, emphasizes the availability of human resources, money, information infrastructure, physical spaces, equipment, and materials with acceptable quantity and quality. The second standard is to promote the safety of health centers in terms of assessing potential hazards for health centers, measuring their vulnerability level, evaluating the preparedness and structural and non-structural capabilities of these centers, and designing and implementing effective interventions to address identified deficiencies.

The third standard concentrates on improving the preparedness of households and public places in dealing with crises, promoting structural and non-structural safety of homes and offices, educating the community, and enhancing their skills in coping with disasters. The fourth one, which is associated with the actions required in the pre-disaster phase, includes developing a comprehensive crisis management plan covering the area, conducting initial arrangements for dealing with potential disasters, and developing internal and external cooperation in this field. Community awareness and participation in disaster management, supply and storage of required supplies, deployment of the early warning system of crises, the designation of health centers and disaster management sites, and other similar subjects are essential in pre-disaster phase too.

The fifth standard focuses on critical-action activities during the crisis, such as the proper functioning of warning systems, the safe harboring of the public, the proper discharge of science, and, generally, the activities of individuals and health personnel during the disaster. Additionally, the sixth standard relates to necessary activities in the aftermath of the disaster. It has several benefits, including the immediate assessment of the crisis's consequences, the determination of the health needs of the community, the proper management of the crisis scene, the conduct of interventions and rehabilitation, the housing and provision of injured people, the environment of affected areas, and the prevention of epidemics by preventing people from engaging in incidental action. Moreover, the seventh standard addresses the effectiveness of crisis-management activities and reduction of physical, mental, and financial damage to injured people through activities undertaken in this area.

The dimension of "taking appropriate measures in the pre-disaster stage" received the highest score among the different dimensions of the model, while the dimension of "taking proper measures during the disaster" obtained the lowest score. The reason for obtaining a high score for activities related to the pre-disaster stage is to return to preventive action and compensate for the disaster's consequences. Although spending, effort, and time can manage disasters in a precautionary manner, even using hundreds or perhaps thousands of resources to prevent them, they do not compensate for damages caused by the disaster. Indeed, many of the consequences of disasters, particularly the psychological ones, are not compensable. Further, prioritizing experts in pre-disaster activities is promising, as it indicates their focus on preventive measures. Activities associated with the pre-disaster stage receive fewer privileges due to their lesser importance in reducing disaster casualties than the other aspects of the model.

Among the final model's performance capability dimensions, the "assessment and promotion of health center preparedness" received the highest score, while the "effectiveness of crisis management activities and programs" dimension achieved the lowest score. Obtaining

a high score for improving the safety of health centers can be attributed to the fact that the number of health centers is limited and can be safely secured by cost and time and prepared to cope with the crisis. Additionally, health centers are a subset of the public health system, and justifying health administrators makes it much easier to invest in improving the safety and performance of centers (as opposed to unscrupulous managers or the general public). In addition, the lower effectiveness of crisis management activities can be due to the multiplicity of achieving these outcomes, the existence of extensive administrative and cultural barriers to achieving them, the small contribution of the health sector to achieving these outcomes, and the very diverse obstacles in the way of achieving them.

Tabrizi et al developed the national departmental accreditation model for primary healthcare in Iran, which was presented in 12 main areas, including disaster management. It was emphasized that disaster management in the PHC accreditation model should notice promotional and preventional aspects in the community (e.g., structural, non-structural, and functional safety) and the preparedness of the primary care system for playing its role in all phases of disasters (30). Likewise, Lestari et al, using the hospital safety index for analyzing disaster and emergency preparedness in Indonesia, emphasized improving PHC system capacity in assessing all types of hazards, structural or construction safety, nonstructural safety, and functional attributes (31).

Similarly, Abbasabadi Arab et al expanded a hospital disaster risk management evaluation model that reported management and leadership, risk assessment, planning, prevention and mitigation, preparedness, response, recovery, and critical performance results as the main areas (32). In their study, Tabrizi and Gharibi determined the situation of disaster management in the accreditation national model of hospital performance and highlighted several areas, such as conducting situation analysis of probable disasters and ranking them based on their frequency and adverse effects, providing a proper plan to manage them, and improving the program based on its evaluation results (33). Comparing these results with those of the current study confirmed high consistency, underscoring important and similar areas.

Given that the final stage of a compilation of accreditation models is to conduct a preliminary test and identify the model's weaknesses as real implementation, researchers consider the implementation of this test to be based on scientific principles and the use of valid tools. The participation of experts and process owners at this stage will greatly improve the model's value and efficiency. Similarly, the researchers suggest using this tool in disaster management-related activities in order to improve the quality and effectiveness of services provided to the community in the field of implementation. In addition, due to the lack of similar accreditation models in the other areas of PHC in Iran, there is a need for similar studies to develop an accreditation model for one another in other

specialized areas.

One of the strengths of this study was to develop the first comprehensive and accredited accreditation model in the field of disaster management using a set of authoritative sources for the formulation of standards and initial validation measures, the response rate of experts to the questionnaire, and the approval of the vast majority. The development of standards and measures with high scores indicates their importance and the experts' ability to execute them effectively. On the other hand, the present study's limitation was related to the use of the Delphi technique. Because of the Delphi constraints, it is possible to challenge the selection of contributors (their specialization and representativeness) and ensure the anonymity of the participants.

### Conclusion

The present study, based on a set of credible sources and a robust method, developed appropriate accreditation measures for continuous improvement of quality and effectiveness in disaster management in PHC in Iran. Undoubtedly, in addition to the usefulness of implementing this accreditation model in achieving its predetermined goals in Iran, the framework and content of its standards and measures will help formulate similar models in other countries.

### Acknowledgments

The researchers would like to express their appreciation for the kind cooperation and financial support of the Health Service Management Research Center of Tabriz University of Medical Sciences, Tabriz, Iran.

### Authors' Contribution

Conceptualization: Masoumeh Ebrahimi Tavani, Esmaeil Moshiri, Farid Gharibi

Data Curation: Esmaeil Moshiri, Farid Gharibi

Formal Analysis: Masoumeh Ebrahimi Tavani, Farid Gharibi

Funding Acquisition: Esmaeil Moshiri

Investigation: Masoumeh Ebrahimi Tavani, Esmaeil Moshiri, Farid Gharibi

Methodology: Masoumeh Ebrahimi Tavani, Farid Gharibi

Project Administration: Masoumeh Ebrahimi Tavani, Farid Gharibi

Resources: Esmaeil Moshiri

Software: Masoumeh Ebrahimi Tavani, Farid Gharibi

Supervision: Farid Gharibi

Validation: Masoumeh Ebrahimi Tavani, Farid Gharibi

Visualization: Esmaeil Moshiri, Farid Gharibi

Writing–Original Draft: Masoumeh Ebrahimi Tavani, Esmaeil Moshiri

Writing–Review & Editing: Farid Gharibi

### Competing Interests

The authors declare that there is no conflict of interests.

### Ethical Approval

IR.TBZMED.REC.1393.259.

### Funding

This study was funded by Semnan University of Medical Sciences Grant Number:1393.259.

### Supplementary Files

Supplementary file contain Table S1.

### References

1. Nivolianitou Z, Synodinou B. Towards emergency management of natural disasters and critical accidents: the Greek experience. *J Environ Manage* 2011;92(10):2657–65. doi:10.1016/j.jenvman.2011.06.003
2. Sariago J. CCATT: a military model for civilian disaster management. *Disaster Manag Response* 2006;4(4):114–7. doi:10.1016/j.dmr.2006.09.001
3. Jennings-Sanders A. Teaching disaster nursing by utilizing the Jennings Disaster Nursing Management Model. *Nurse Educ Pract* 2004;4(1):69–76. doi:10.1016/s1471-5953(03)00007-6
4. Baker D, Refsgaard K. Institutional development and scale matching in disaster response management. *Ecological Economics* 2007;63(2):331–43. doi:10.1016/j.ecolecon.2007.01.007
5. Mahdi T, Mahdi A. Reconstruction and Retrofitting of Buildings after Recent Earthquakes in Iran. *Procedia Engineering* 2013;54:127–39. doi:10.1016/j.proeng.2013.03.012
6. Malaki M, Shojaei P. HOSPITALS PREPARATION IN DISASTERS: SECURITY. *Journal of Health Administration* 2007;10:65–70.
7. Hosseini Shokouh SM, Anjomshoa M, Mousavi SM, Sadeghifar J, Armoun B, Rezapour A, et al. Prerequisites of preparedness against earthquake in hospital system: a survey from Iran. *Glob J Health Sci* 2014;6(2):237–45. doi:10.5539/gjhs.v6n2p237
8. Al Khalailah MA, Bond E, Alasad JA. Jordanian nurses' perceptions of their preparedness for disaster management. *Int Emerg Nurs* 2012;20(1):14–23. doi:10.1016/j.ienj.2011.01.001
9. Olness K, Sinha M, Herran M, Cheren M, Pairojkul S. Training of health care professionals on the special needs of children in the management of disasters: experience in Asia, Africa, and Latin America. *Ambul Pediatr* 2005;5(4):244–8. doi:10.1367/a04-122r2.1
10. Pujawan IN, Kurniati N, Wessiani NA. Supply chain management for Disaster Relief Operations: principles and case studies. *International Journal of Logistics Systems and Management* 2009;5(6):679–92. doi:10.1504/IJLSM.2009.024797
11. Bulut M, Fedakar R, Akkose S, Akgoz S, Ozguc H, Tokyay R. Medical experience of a university hospital in Turkey after the 1999 Marmara earthquake. *Emerg Med J* 2005;22(7):494–8. doi:10.1136/emj.2004.016295
12. Gupta SH, Kant S. Emergency medical services and disaster management. ed n, editor. New Delhi: Gaypee Inc; 2004.
13. World Health Organization. Risk reduction and emergency preparedness, WHO six-year strategy for the health sector and community capacity development. Geneva, Switzerland: World Health Organization Publisher; 2007. Available from: <https://iris.who.int/items/899784c2-eee0-4890-b79d-90ca0a2201db>
14. Kooti M, Neisi A, Hatami H. Functional, Structural and Non-Structural Preparedness of Ahvaz Health Centers Against Disasters in 2014 – 2015. *Jundishapur Journal of Health Sciences* 2017;9(1):1-6. doi:10.17795/jjhs-34239
15. Tabrizi JS, Gharibi F, Pirahary S. Developing of National Accreditation Model for Rural Health Centers in Iran Health System. *Iran J Public Health* 2013;42(12):1438–45.
16. Tabrizi J, Gharibi F. Systematic survey of accreditation models for designing a national model. *HBI\_Journals* 2011;16(3):95-109.
17. Al-Awa B, De Wever A, Melot C, Devreux I. An overview of patient safety and accreditation: a literature review study. *RJMS*. 2011;5(4):200-23.
18. Fortune T, O' Connor E, Donaldson B. Guidance on designing healthcare external evaluation programmes including accreditation. Dublin, Ireland: International Society for Quality in Healthcare (ISQua); 2015. Available from: <https://ieea.ch/wp-content/uploads/2024/09/Guidance-on->

[Designing-Healthcare-External-Evaluation-Programmes-including-Accreditation.pdf](#)

19. Greenfield D, Civil M, Donnison A, Hogden A, Hinchcliff R, Westbrook J, et al. A mechanism for revising accreditation standards: a study of the process, resources required and evaluation outcomes. *BMC Health Serv Res* 2014;14:571. doi:[10.1186/s12913-014-0571-8](#)
20. Braithwaite J, Westbrook J, Pawsey M, Greenfield D, Naylor J, Iedema R, et al. A prospective, multi-method, multi-disciplinary, multi-level, collaborative, social-organisational design for researching health sector accreditation [LP0560737]. *BMC Health Serv Res* 2006;6:113. doi:[10.1186/1472-6963-6-113](#)
21. Smits PA, Champagne F, Contandriopoulos D, Sicotte C, Prével J. Conceptualizing performance in accreditation. *Int J Qual Health Care* 2008;20(1):47–52. doi:[10.1093/intqhc/mzm056](#)
22. Ammar W, Wakim IR, Hajj I. Accreditation of hospitals in Lebanon: a challenging experience. *East Mediterr Health J* 2007;13(1):138–49.
23. El-Jardali F. Hospital accreditation policy in Lebanon: its potential for quality improvement. *J Med Liban* 2007;55(1):39–45.
24. Saleh SS, Bou Sleiman J, Dagher D, Sbeit H, Natafgi N. Accreditation of hospitals in Lebanon: is it a worthy investment? *Int J Qual Health Care* 2013;25(3):284–90. doi:[10.1093/intqhc/mzt018](#)
25. Kim YS, Han SH, Hwang JH, Park JM, Lee J, Choi J, et al. Development of the Korean framework for senior-friendly hospitals: a Delphi study. *BMC Health Serv Res* 2017;17(1):528. doi:[10.1186/s12913-017-2480-0](#)
26. Lawshe CH. A quantitative approach to content validity. *Pers Psychol*. 1975;28:563-75.
27. Lee PP, Sultan MB, Grunden JW, Cioffi GA. Assessing the Importance of IOP Variables in Glaucoma Using a Modified Delphi Process. *J Glaucoma* 2010;19(5):281–7. doi:[10.1097/IJG.0b013e3181b4ca8d](#)
28. Culley JM. Use of a computer-mediated Delphi process to validate a mass casualty conceptual model. *Comput Inform Nurs* 2011;29(5):272–9. doi:[10.1097/NCN.0b013e3181fc3e59](#)
29. Rowe G, Wright G, Bolger F. Delphi: A reevaluation of research and theory. *Technological Forecasting and Social Change* 1991;39(3):235–51. doi:[10.1016/0040-1625\(91\)90039-I](#)
30. Tabrizi J, Gharibi F, Dadgar E. Developing a Departmental Accreditation Model for Primary Healthcare in Iran. *Middle East Journal of Rehabilitation and Health Studies* 2021;8(2):e110127. doi:[10.5812/mejrh.110127](#)
31. Lestari F, Paramitasari D, Kadir A, Firdausi NA, Fatmah, Yani Hamid A, et al. The Application of Hospital Safety Index for Analyzing Primary Healthcare Center (PHC) Disaster and Emergency Preparedness. *Sustainability* 2022;14(3):1488. doi:[10.3390/su14031488](#)
32. Abbasabadi Arab M, Khankeh HR, Mosadeghrad AM, Farrokhi M. Developing a Hospital Disaster Risk Management Evaluation Model. *Risk Management and Healthcare Policy* 2019;12(null):287–96. doi:[10.2147/RMHP.S215444](#)
33. Tabrizi JS, Gharibi F. Situation of disaster management in accreditation national model of hospital performance. *Quart Sci J Rel Resc*. 2012;4(3):35-46