Developing an Accreditation Model for Disaster Management in Iran's Primary Health Care System

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Abstract

Context: Disaster management is one of Iran's primary health care (PHC) areas, and it is becoming increasingly important due to continuous disasters.

Objectives: This study aimed to develop a national accreditation model for disaster management in Iran's PHC system.

Methods: The primary model was developed 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 developed model. The primary standards were assessed from the experts' perspective based on "importance" and "feasibility" criteria on a 9-degree scale. In two rounds of Delphi, 14 out of 16 experts completed the questionnaires.

Results: The final developed model emphasizes 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.

Conclusions: Considering the strong consensus among experts on the Delphi stage, this model can improve disaster management performance.

Keywords: accreditation, disaster management, model

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 led to disasters such as floods, tsunamis, abnormal and destructive precipitation, landslides, and so on, so 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 the control of the situation mentioned above is beyond society's ability and requires external assistance (1, 4).

Iran's unique climate has made it one of the world's most crisis-stricken countries. Out of the 40 types of natural disasters registered worldwide, 31 are occurring in our country and are fatal. According to available statistics, in the past 90 years, more than 120,000 people in Iran have been killed due to these crises, 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). Iran is the fifth most prone to natural disasters in Asia and the tenth most in the world. This position results 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 obvious 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). Considering that the preparedness of health centers in the event of a crisis will reduce human and financial losses, these centers' technical and operational capacity will be vital. Accordingly, worldwide attention is paid to investment in promoting the safety of health centers and increasing the knowledge and skills of their employees, with significant investments in this regard (11, 12).

Published statistics indicate that in the Indian tsunami (2004), more than 90% of health centers, including hospitals, pharmacies, primary health care centers, and even crisis management centers, were seriously damaged so that they couldn’t provide their medical services. Also, these centers lost their health personnel due to severe injuries or inactivity (13). Studies in Iran regarding the level of readiness of (primary health care) PHC centers suggest that these centers do not have structural and even functional skills to deal with disasters, and they do not have enough safety. Also, 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, one of the methods for improving the quality and safety of healthcare and medical care that is critical to disaster management is accreditation. Accreditation is an approach through which a provider of health services is assessed based on excellent and up-to-date standards and by their peers. The goal of accreditation in health organizations is to improve the quality of health services, improve healthcare management integrity, establish a database of health services organizations, increase safety and reduce risks to patients and employees, provide education and advice to health services organizations, and reduce costs by focusing on increasing the efficiency and effectiveness of services (15, 16).

Accordingly, Iran's health system, like many other health systems, has been developing an accreditation model for health care and incorporating assessment standards related to disaster management. The point to be considered is that this accreditation model is specific to the hospital, and the disaster management standards are limited to the readiness of the hospitals and have been neglected to ensure preparedness at the community level. The fact is that most people in the community use outpatient care, and especially PHC, far more than hospital care. Hence, the need to address the crisis management issue in these areas is evident. Also, 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 was designed and implemented to develop a national accreditation model for disaster management in the field of PHC in Iran.

Materials and Method

Undoubtedly, the main factor encouraging health organizations to improve their performance during accreditation is the excellent standards in the accreditation model (17). These standards provide a framework for self-assessment of health centers and provide 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). Accordingly, the 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 is highly felt (20). In addition, these standards need to 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 when adherence to accrediting criteria aligns closely with the community's requirements, acceptance and efficacy will be enhanced, leading to higher success throughout the implementation stage (19). Therefore, measuring the necessity and importance of a standard in an accreditation model and 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 often used to confirm the compliance of accreditation standards with a specific field. This technique is an effective method that can assess the initialized standards based on criteria such as importance and ability to execute from the point of view of the experts and significantly increase the probability of future success of the accreditation model in real implementation (25). This technique aims to use positive features of group interaction and to avoid negative aspects that relate to the social problems of these groups, such as 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).

Accordingly, the research team, using the available scientific documentation on the disaster management field in Iran’s PHC, holding numerous meetings with experienced people in this field, and using authoritative scientific texts, has developed primary accreditation standards and related measures. Subsequently, all of 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). However, in this study, 16 experts with PhD degrees in health services management, disaster management, and health policy participated in the Delphi phases. The designed questionnaires were presented to experts using two methods: presenting the available materials and e-mailing them to experts in other states. After analyzing the results of each stage, the questionnaires will be 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. If the median index score was 4 to 7, the standard was accepted into the next round, and the standard with a score higher than 7 was accepted 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. This approach encourages deeper reflection on the areas for assessment and modification, making adjusting the rating more desirable. 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 stated, 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. 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 component under consideration. Additionally, experts can alter their comments at their discretion without compromising their integrity or dignity. Repeating the questionnaire by multiplying it by contributors in successive sequences allows respondents to modify and comment (25).

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. In this way, all participants, 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).

The result of the review of the resources and the initial source for the design of the accreditation model in this area was to achieve seven basic standards with 149 related measures. The titles and dimensions of these standards focus on "the quantitative and qualitative supply of resources needed to provide services related to disaster management", "assessment and promotion of vulnerability of health centers", "assessment and improvement of preparedness of households and public places against disasters", "Implying appropriate measures in the pre-disaster phase", taking appropriate measures during the disaster", "taking appropriate measures in the post-crisis, and "effectiveness of disaster management programs and activities".

In Delphi's first round, a questionnaire with 151 measures in seven of the main standards mentioned was presented to 16 Iranian experts who were experts in the main departments of health medicine of the country's medical sciences in the field of crisis management, with 14 of them. They've completed and sent 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 of the measures were based on a score of 4 to 7 in one or both, the importance and the ability to execute into the second round, and 2 of the measures were also 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 (100% response rate), the total score assigned to them, plus the score assigned to each expert, was reported to them separately. At this stage, experts rescaled the scales, ensuring that all standards received the necessary approval level. Also, 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 given in Table 1.

The issue of "taking appropriate measures in the pre-crisis phase" is the most significant among the various dimensions, with an average score of 8.89 for its measures. On the other hand, the related "to take appropriate measures at the stage of occurrence crisis" has the lowest score, with an average score of 8.32 for its measures. Furthermore, the dimension of "assessing and improving the preparedness of health centers" has the highest average score of 8.07 for its measures in the final model's performance capability. The dimension related to "the effectiveness of the activities and Crisis management related programs" has the lowest average score of 11.7 for its measurements. Additionally, 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.

Table 1: Selected measures and their approval process

Code	Measure	First round	second round	Importance	Feasibility
Standard 1: Quantitative and qualitative supply of resources required to provide services related to disaster management					
1-1	The staff required to carry out disaster-related activities is well-suited.	✓		8	8
1-2	Staff in this area received primary and ongoing training.	✓		8	8
1-3	Disaster management personnel have the skills and experience to perform their assigned tasks.	✓		9	8.5
1-4	The financial resources required for disaster management are provided and used appropriately.	✓		9	8
1-5	Disaster management is financed with a justifiable approach based on health priorities.		✓	9	7
1-6	The crisis management area has created and expanded information infrastructure management, such as computer systems, the Internet, software, and programs required for proper investment.	✓		9	7.5
1-7	Health centers produce and disseminate health information well in collaboration with higher management levels.	✓		7	8
1-8	The physical spaces of the health centers are being used to carry out disaster management activities and are well used.	✓		7.5	8.5
1-9	Equipment is required to properly operate with the necessary quality and quantity.		✓	8	8
1-10	The raw materials required to perform properly and the quantity and quality are supplied and used.	✓		8	9
Standard 2: Assessment and promotion of preparedness in health centers					
2-1	A complete and up-to-date list of health centers with their features and technical capabilities is provided.	✓		9	9
2-2	All possible hazards, such as geological hazards, climate, biological hazards, technology, and social phenomena that can interfere with the function of comprehensive health services are carefully identified and prioritized	✓		9	8

2-3	The vulnerability level of comprehensive health services is carefully assessed against any type of hazard (especially high-risk).	✓		9	8
2-4	Functional Safety Function of Comprehensive Health Services Centers in areas such as the organization of the Hospital Crisis Committee, an operational plan for responding to internal and external hazards, potential medical plans, an operational plan for preserving and restoring vital services, access to medicines and equipment, and other reserves. Emergency requirements are carefully evaluated, and major deficiencies are identified and prioritized.	✓		9	8
2-5	Non-structural safety status of comprehensive health services centers in areas such as vital, electrical, communication systems, water and fuel supply systems, medical gases, thermal systems, refrigeration and ventilation, fixed and mobile office equipment, medical and laboratory equipment And the reserves for diagnosis and treatment, the components of the architecture are carefully evaluated, and major deficiencies are identified and prioritized.	✓		9	8
2-6	The structural safety status of comprehensive health services centers has been carefully evaluated, focusing on components such as geological conditions, pillars, walls, ceilings, stairways, corridors, doors, windows, and other structural components. This evaluation identifies major deficiencies and priorities.	✓		9	8
2-7	Corrective and safety improvement measures are taken based on the priorities set in the above areas.		✓	8.5	7
2-8	Corrective actions and interventions have increased the physical safety of the comprehensive health centers and their sustainability in the event of disasters.	✓		9	8.5

Table 1: Selected measures and their approval process (continue)

Code	Measure	First round	second round	Importance	Feasibility
Standard 3: Assessing and improving the preparedness of households and public places against disasters					
3-1	The resistance of the building to the location of the household and the public places against earthquakes is assessed by the experts.	✓		8	7.5
3-2	If a building is not resistant to earthquakes, a suitable step has been taken to retrofit it.	✓		8.5	8
3-3	The vulnerability of buildings to earthquakes is carefully assessed.		✓	8	7
3-4	Appropriate measures have been taken to reduce the vulnerability of unauthorized occupants of homes and public places.	✓		8	8.5
3-5	The emergency pack and disaster situations in households and public places are full of contents.	✓		8	8
3-6	In emergencies and disasters, households and public places have an evacuation plan.	✓		8	8
3-7	Family members and public places personnel are familiar with the initial warnings of major regional threats such as floods, storms, etc.	✓		9	8
3-8	There are firefighting products available at home and in public places.	✓		9	8.5
3-9	At least one household member and some public-place personnel have received adequate training and skills to provide first aid effectively.	✓		9	8
3-10	All households are public places in disaster management plans.		✓	9	7.5
3-11	All households and public places have been trained in disaster preparedness this year.	✓		9	8
3-12	All households and public places have been evaluated for disaster preparedness this year.	✓		9	8
3-13	Households and public places annually practice emergency and disaster.	✓		8	9
3-14	Indicators related to this field are calculated continuously and accurately.	✓		8.5	8
3-15	The calculated indicators indicate the continuous improvement of activities and indicators related to this area.	✓		9	7.5
Standard 4: Perform appropriate measures in the pre-disaster stage					
4-1	All planning to deal with potential disasters has occurred before they occur.	✓		9	8
4-2	All specialist government forces, organizations, people, institutions, and public forces have the necessary equipment and facilities to deal with disasters.	✓		9	8

4-3	In the Comprehensive Disaster Preparedness Program, all necessary steps are taken to reduce potential risks.	✓		9	8
4-4	In addition to covering all comprehensive health centers, an extensive effort has been made to promote the culture of insurance in the covered community.	✓		9	8.5
4-5	Improvement of human resource capacity by implementing educational programs and exercises in this field.	✓		9	7.5
4-6	The development of inter-departmental and inter-sectional, regional, and international health departments in management and disaster risk reduction has been considered in the form of the health committee's health committee in incidental accidents.	✓		9	8
4-7	Health promotion measures are well implemented.	✓		8	8
4-8	Public awareness about risk assessment and disaster management strategies is done desirably.	✓		8	8
4-9	Public participation has been drawn to implement health-centered disaster risk reduction programs.	✓		8	8.5
4-10	The coordinated and effective response plan is developed and implemented with the participation of other departments.	✓		9	8.5
4-11	Primary health service supplies and supplies are stored in the response phase.		✓	9	7
4-12	Establishing the primary warning system process for hazardous health facilities is well underway.	✓		8	7
4-13	Special education programs are implemented for health managers and employees.	✓		9	7.5

Table 1: Selected measures and their approval process (continue)

Code	Measure	First round	second round	Importance	Feasibility
4-14	Disaster preparedness exercises in health facilities and the community are appropriately implemented.	✓		9	7.5
4-15	The care system, public education, and the training of health and medical personnel of the public and private sectors, as well as other government departments and official relief workers, are well established.	✓		9	8
4-16	The list of drugs, vaccines, supplies, materials, and equipment needed for the disease-care system is well-prepared and provided.	✓		9	8
4-17	Health centers and reference laboratories are located in different parts of the country.	✓		9	7.5
4-18	Adequate education is provided to the general public, and all people in the community have gained sufficient skills in this regard.	✓		8	8
4-19	In building construction, flood and earthquake safety must be respected per engineering regulations, and old buildings must be earthquake-resistant.	✓		9	8
4-20	The construction of the building near the lakes, ponds, rivers, slopes, etc. has been avoided.	✓		9	8
4-21	Building stones, warheads, and chimneys of hearths and fireplaces have been investigated and restored regarding the possibility of a collapse during an earthquake.	✓		9	8
4-22	Heavy and long-lasting objects, such as refrigerators, water heaters, coffins, etc., are firmly fixed.	✓		8	8.5
4-23	The air conditioner’s location outside the building is checked and secured if necessary.	✓		8.5	8
4-24	Heavy objects and chemicals are placed on lower shelves.	✓		9	8
4-25	Broken glass and cracked doors and windows have been replaced.		✓	9	7.5
4-26	The sleeping places of the family have been removed from the window, underlayer, chandelier, etc.	✓		9	8
4-27	Note the emergency phone numbers and a fire extinguisher in the kitchen on the wall.	✓		9	7
4-28	Identification cards, valuable documents, and money should be held in a safe or fireproof box.	✓		8	7.5
4-29	There should be easy access to emergency equipment such as blankets, towels, a radio,	✓		9	8

	flashlights, and primary care boxes.				
4-30	The measures in this area have contributed to improving preparedness and reducing the vulnerability of health resources and facilities in crises.	✓		9	8
4-31	The measures in this area have led to increased preparedness and reduced vulnerability of households to disasters.	✓		9	8
4-32	Indicators related to this field are calculated continuously and accurately.	✓		8	8.5
4-33	The calculated indicators indicate the continuous improvement of activities and indicators related to this area.	✓		8	8
Standard 5: Take appropriate measures during the disaster					
5-1	The alert system and monitoring during the disaster are predicted and work properly.	✓		9	8
5-2	The tranquility of the people is preserved and avoided by fear.	✓		9	8
5-3	The people inside the building move away from the windows and mirrors and carefully rub the rubble.	✓		9	8
5-4	People get safe in the right place, such as under the bed and tight door frame.	✓		9	8
5-5	Individuals in flats do not run to the exit of the building and cover their heads when they leave the building.	✓		9	8
5-6	People do not use the elevator, so they close the gas immediately.	✓		9	8
5-7	People in public places like cinemas, etc., refrain from invading.	✓		9	8.5
5-8	People are working to evacuate the victims and resettle them at temporary sites.	✓		9	8
5-9	People cut off electricity and gas flow.	✓		9	8

Table 1: Selected measures and their approval process (continue)

Code	Measure	First round	second round	Importance	Feasibility
5-10	People prepare for their possible aftershocks.	✓		9	8
5-11	If possible, people will take enough water and close the flames.	✓		9	8
5-12	In a fire, people control the fire with water or a fire extinguisher.	✓		9	7.5
5-13	People listen to the radio and receive news and reports.	✓		9	7
5-14	The people outside the building will take themselves to an open and distant place.	✓		9	7
5-15	The people outside the building will take themselves to an open and distant place.	✓		9	7
5-16	If people are on the flood stream, they will accelerate to high points.	✓		9	7.5
5-17	Discharge operations are carried out at the right time and after the risks are eliminated correctly.	✓		9	8.5
Standard 6: Take appropriate measures after the disaster					
6-1	Rapid and continuous evaluation of the extent of the damage to society, particularly health care facilities, is done promptly.	✓		9	8
6-2	The needs of the affected population are continuously evaluated in a precise and timely manner.	✓		8.5	8
6-3	Relief officials well receive the scene management command.	✓		9	8
6-4	The continuity of service, supply of human resources, and alternative space are guaranteed to compensate for the financial losses incurred.	✓		9	8
6-5	The management of financial assistance and volunteers is well on the scene of the incident.	✓		9	9
6-6	The safety of the lives and property of the injured people is guaranteed.	✓		9	8
6-7	In case of fire or explosion, appropriate response measures are taken.	✓		8	7.5
6-8	Recovery involves the physical and mental rehabilitation and repair of the injured.	✓		9	7.5
6-9	Training on personal and public health is needed to avoid the spread of epidemics to the general public.	✓		9	7
6-10	Environmental health facilities such as safe drinking water, proper bathroom and toilet facilities, waste disposal, food hygiene, etc., are considered.	✓		9	8

6-11	Transportation-related activities are carried out to carry casualties or other facilities appropriately.	✓		9	8
6-12	The number of vulnerable populations affected (those urgently needing relief supplies).	✓		9	8
6-13	The number of injured and dead people in the area is affected by the impact.	✓		9	8
6-14	The health facility rehabilitation program has a sustainable development approach and has been well developed and implemented.	✓		9	8.5
6-15	Reconstruction of facilities and rehabilitation of damaged health plans are done correctly.	✓		9	7
6-16	Participation in the compilation and implementation of psychosocial rehabilitation of the community is well implemented.	✓		8	8
6-17	The necessary health measures, including in the field of environmental health, are provided.	✓		9	9
6-18	The required medical and therapeutic measures are ongoing.	✓		7	8
6-19	The exact implementation of the infectious diseases and epidemic control surveillance system has been established.	✓		9	8
6-20	Control measures related to insects and vermin are effective.	✓		9	8
6-21	Vaccination-related measures have been taken.	✓		9	8
6-22	Laboratory services are required.	✓		9	8
6-23	The proper organization of human and non-human resources is well done.	✓		9	8
6-24	The exact building inspection is done.	✓		8	8.5
6-25	Avoid gathering in the streets and blocking the passage of a relief vehicle.	✓		8	8

Table 1: Selected measures and their approval process (continue)

Code	Measure	First round	second round	Importance	Feasibility
6-26	Approaching damaged and high-rise buildings is avoided.	✓		8	7.5
6-27	Passing through narrow streets is avoided.	✓		9	7
6-28	Avoiding the power cord and the iron or metal parts.	✓		9	7
6-29	Standing along the river, the edge of the rocks and the damaged buildings are avoided.	✓		8	7
6-30	Avoid walking and standing under electric wires and in the vicinity of the electric shaft.	✓		9	8
6-31	Avoid moving any building materials.	✓		9	8
6-32	The health instructions provided to humans are strictly and carefully observed.	✓		9	8
6-33	Indicators related to this area are calculated continuously and accurately.	✓		9	8.5
6-34	The calculated indicators indicate continuous improvement of indicators related to this area.	✓		9	8
Standard 7: The Effectiveness of Disaster Management-Related Programs and Activities					
7-1	The disaster management unit's (DMU) operation has led to a rapid assessment of the health status.	✓		9	9
7-2	The operation of the DMU has effectively reduced the casualties and injuries of people in disasters.	✓		9	8
7-3	The operation of the DMU has led to a significant reduction in the financial loss of society in disaster.	✓		9	8
7-4	The operation of the DMU has reduced the losses incurred by domestic animals in disasters.	✓		7.5	7
7-5	The operation of the DMU has reduced the severity of public service interruptions, such as electricity, gas, communications, sewage, food, and so on.	✓		8	8
7-6	The DMU's management has effectively reduced the number of injuries to homes, public places, and health facilities in disasters.	✓		8	8
7-7	The operation of the DMU has reduced the loss and damage of public and private property in disasters.	✓		8	8
7-8	The operation of the DMU has reduced the spread of communicable diseases in disasters.	✓		8	8

7-9	The operation of the DMU has prevented the spread of non-communicable diseases in disasters.	✓		9	7.5
7-10	The operation of the DMU has reduced the disruption of normal activities in disasters.	✓		9	8
7-11	The operation of the DMU has reduced the social response to disasters.	✓		9	8
7-12	The operation of the DMU has reduced the population displacement in disasters.	✓		9	7.5
7-13	The operation of the DMU has led to food shortages and nutritional disturbances in disaster.	✓		9	7.5
7-14	The operation of the DMU has reduced the psychological problems caused by disasters.	✓		8	7
7-15	The operation of the DMU has reduced the problems associated with environmental health in disasters.	✓		9	7
7-16	The operation of the DMU has reduced the problems of communication and transportation in disasters.	✓		8	8
7-17	The operation of the DMU has improved the management of international assistance in disasters.	✓		9	8
7-18	The operation of the DMU has improved the management of temporary accommodation and refugee camps in disasters.	✓		8	8
7-19	The operation of the DMU has led to better preparedness for unexpected accidents.	✓		8	8.5
7-20	The operation of the DMU has improved the information recording and reporting system in disasters.	✓		8	8
7-21	The operation of the DMU has led to the provision of supplies, including materials and drugs, in disasters.	✓		8	8

Table 1: Selected measures and their approval process (continue)

Code	Measure	First round	second round	Importance	Feasibility
7-22	There is a well-designed program to implement interventions related to mental health in disasters.	✓		9	8
7-23	Good public participation, especially from community members, is provided at times of crisis to provide mental health assistance.	✓		9	9
7-24	Suitable mental health and treatment facilities are provided in times of disaster.	✓		9	7.5
7-25	Special attention is paid to vulnerable groups, especially children, during disasters.	✓		9	8
7-26	The services provided in this area have reduced the prevalence of psychological complications in unexpected events.	✓		9	8
7-27	The services provided in this area have prevented the progression and exacerbation of psychological complications in unexpected accidents.	✓		9	8
7-28	The services provided have led to an increase in the adaptation and survival capacity of the survivors.	✓		8.5	7.5
7-29	The services provided in this area have contributed to strengthening the social skills of the survivors and helping the community to reorganize self-help and rebuild the community.	✓		9	8
7-30	Indicators related to this field are calculated continuously and accurately.	✓		8	8
7-31	The statistics show that there is a continuous improvement in activities and indicators related to this area.	✓		9	7.5

Discussion

This study aimed to develop a national accreditation model for crisis management in Iran's PHC field. The final model developed during the study included seven core standards, including "quantitative and qualitative supply of resources needed to provide services related to disaster management", "assessment and promotion of health center preparedness", "assessment and improvement of preparedness of

households, and places public against disasters"," taking appropriate measures in the pre-disaster phase", "taking appropriate measures during the disaster", "taking appropriate measures in the post-disaster period "and "the effectiveness of disaster management programs and activities".

The first standard of this model, which relates to the resources needed to carry out 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 of this model is to promote the safety of health centers in terms of assessing potential hazards for health centers, assessing their vulnerability level, assessing the preparedness and structural and non-structural capabilities of these centers, and designing and implementing effective interventions to address identified deficiencies.

The third standard emphasizes 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 standard, which relates to 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 subjects like these.

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. The sixth standard relates to the 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. The seventh standard focuses on the effectiveness of crisis-management activities and reducing 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 appropriate measures during the disaster" received 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. Spending, effort, and time can manage disasters in a precautionary manner, even using hundreds or perhaps thousands of resources to prevent them, but this does not compensate for the damages caused by the disaster. Indeed, many of the consequences of disasters, particularly the psychological ones, are not compensable. Prioritizing experts in pre-disaster activities is also 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 other aspects of the model.

Among the final model's performance capability dimensions, the "assessment and promotion of health center preparedness" dimension received the highest score, while the "effectiveness of crisis

management activities and programs" dimension received the lowest score. The reason for 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. Also, 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 attributed 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.

The study of Tabrizi in 2021, which was conducted to develop the national departmental accreditation model for primary healthcare in Iran, 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 (such as structural, non-structural, and functional safety) and the preparedness of the primary care system for playing its role in all phases of disasters (30). The study of Lestari in 2022, which was conducted to use the hospital safety index for analyzing disaster and emergency preparedness in Indonesia, accentuated improving PHC system capacity in assessing all types of hazards, structural or construction safety, nonstructural safety, and functional attributes (31).

The study of Abbasabadi Arab in 2019 was conducted to develop a hospital disaster risk management evaluation model that reached areas of management and leadership, risk assessment, planning, prevention and mitigation, preparedness, response, recovery, and critical performance results as main areas (32). Another study from Tabrizi in 2012, which was done to determine the situation of disaster management in the accreditation national model of hospital performance, highlighted 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 current study results has shown high consistency, and all of them emphasized important and similar areas.

Regarding the fact 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 with the use of valid tools. The participation of experts and process owners at this stage will greatly improve the model's value and efficiency. The researchers also suggest using this tool in disaster management-related activities 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 other areas of PHC in Iran, the need for similar studies to develop an accreditation model for one another in other specialized areas is felt.

One of the strengths of this study is 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 both their importance and the experts' ability to execute them effectively. The present study's limitation

is 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.

Conclusions

The present study, based on a set of credible sources and a robust methodology, sought to develop 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 to formulate similar models in other countries.

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The conflict of interest

The authors declare that there is no conflict of interest.

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