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DOI:  
10.4103/jehp.jehp\_248\_22

# Exploration of the primary needs of health care services for earthquake victims in the west of Iran

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## Abstract:

**BACKGROUND:** Natural disasters always have significant effects on social infrastructures, living conditions, and health care systems. This study aims to explain the needs of victims in the west of Iran for primary health care services.

**MATERIALS AND METHODS:** This thematic content analysis and qualitative study was done from September 2020 to June 2021 in the west of Iran. Participants were selected using purposive sampling method. The data were extracted through semi-structured interviews with 17 earthquake victims and then examined through thematic content analysis.

**RESULTS:** By analyzing and coding the data, the primary needs of victims post an earthquake in the west of Iran were classified into four main categories (health services, mental health, social health, and health management (and 14 subcategories).

**CONCLUSION:** Regarding the primary needs (health services, mental health, social health, and health management), establishing a headquarters to meet the immediate and special health care needs seems to be required. It was recommended to create institutions for monitoring and supporting the health care needs at the level of the community and even policymaking, as well as guiding earthquake-stricken areas such as the eco-village.

## Keywords:

Earthquake victims, eco-village, health care, health services, post-traumatic stress disorder, qualitative study

## Introduction

Iran is one of the countries with the highest rate of natural disasters, and it has witnessed high numbers of droughts, earthquakes, and floods in recent years.<sup>[1]</sup> In the last decade, approximately one billion people in the world have been directly and indirectly involved in disasters. More than 90% of deaths in developing and less-developed countries are due to accidents and disasters. Iran is a developing country in Asia that is prone to various natural and human-made disasters.<sup>[2,3]</sup> A 7.3-magnitude earthquake occurred in Kermanshah province in the west of Iran, at 21:48 local

time on 12 November 2017, and caused hundreds of deaths and more than 10,000 casualties.<sup>[4]</sup> More than 10,000 residences were destroyed and thousands of people became homeless in Sar-e Pol-e Zahab, Ezgeleh, Kueek, and neighboring villages.<sup>[5]</sup> At least eight cities—Qasr-e Shirin, Ezgeleh, Salas Babajani, Gilan-e-Gharb, Sarpol-e Zahab, Dalahoo, West Islamabad, and Javanrood—and 1933 villages were damaged.<sup>[2]</sup>

These disasters endanger people's health and make it difficult to supply health care services.<sup>[6-8]</sup> Among the elements involved in disaster management, health care services are considered the most required.<sup>[9,10]</sup> Results of some studies indicate that one of the

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**How to cite this article:** Solhi M, Zahed S, Ostadtaghizade A, Gilan HD. Exploration of the primary needs of health care services for earthquake victims in the west of Iran. *J Edu Health Promot* 2022;11:416.

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Received: 14-02-2022  
Accepted: 08-05-2022  
Published: 28-12-2022

most important challenges in the west earthquake of Iran was health-related issues.<sup>[11]</sup> The vulnerability to disasters is a phenomenon of social, economic, health, and cultural dimensions. On the other hand, disasters like floods and earthquakes destroy the public health system and the infrastructure (water, sewage system, shelter, food, and health), which directly and indirectly affect the communities.<sup>[11]</sup> For better management, the needs of victims of earthquakes should be considered.<sup>[12]</sup> Recently, one of the most horrific earthquakes jolted the Kermanshah, in the west of Iran in 2017. Due to the importance of health care services post the earthquake, this qualitative study intends to explore the primary needs of health care services in the Kermanshah earthquake.

## Materials and Methods

### Study design and setting

This study was a thematic content analysis and qualitative study.

### Study participants and sampling

Participants were 17 earthquake victims in the west of Iran. They were selected via purposive sampling method. Data collection began in September 2020 and ended in June 2021 in the west of Iran (earthquake-stricken area).

The criteria for choosing the participants were persons over 20 years, affected by the Kermanshah earthquake directly, and interested in taking part in the study.

### Data collection tool and technique

Data were accumulated in the form of interviews, for acquiring a general point of view about the requirements for health care services. Till data saturation, the interview was done in different places and at different times based on previous coordination. Informed consent was obtained from the participants. Participants ensured the confidentiality of data, the right to withdraw from the study at any stage, and the researchers' respect for privacy in the analysis and management of their data.

In this study, the corresponding author was responsible for managing the interview. Before starting the interview, participants were asked to answer demographic questions such as age, gender, educational status, and earthquake damage status. The interview began with questions to get to know each other better and create a more intimate situation. We then asked them, "Please talk about your experiences with health requirements after the event." To detail further factors, more questions were enquired during the interview. Probing questions were used, such as "What do you mean?" or "Please explain more, if possible". At the end of each interview, the participants were asked whether they'd like to add

something extra or not and in case of remembering something else, to contact the researcher. Initially, semi-structured interviews with 17 key participants were accomplished for a clear understanding of the subject. From the 15<sup>th</sup> interview, new codes were rarely identified. In interview 17<sup>th</sup>, almost no new code, category, or theme appeared (data saturation). So, at this point, the interviews were ended.

The semi-structured interviews lasted for 30–60 minutes. After the interviews were typed and re-read by the authors, they were re-interviewed in several cases due to the need for more detailed. Most of the interviews were recorded and typed word by word. Due to the request of two participants, their interviews were written on paper by themselves.

In this study, data were analyzed by using the ELO method from the first interview parallelly with the interviews (simultaneous analysis). The text of the interviews was rewritten word by word. The audio files were listened to several times and the texts of the interviews were reviewed several times, and the researcher acquired a general comprehension of the data.<sup>[13]</sup> The codes were classified directly using the text data.<sup>[14]</sup> Eventually, the final codes were classified according to their similarities and diversities.<sup>[15]</sup>

Codes and topics which had been obtained through interviews were reviewed and modified by peer review among authors.<sup>[16]</sup> Furthermore, an external check was made by an earthquake management expert familiar with qualitative studies. This approach was applied to increase the validity of data in qualitative research.<sup>[15]</sup>

To assure about the nuances of the findings, a bilingual member of the research team and colleagues from out of the research team reviewed and evaluated the notes, codes, and categories. Our experienced and multidisciplinary team included two researchers with experience in qualitative studies, a specialist in health education and promotion, and an expert in earthquake management, who collected rich data and applied valid analysis. All interviews were translated from Kurdish to Farsi, then to English.

### Ethical consideration

The study is a part of a thesis Hadi Darvishi Gilan, a conclusion on health education and promotion with the financial support of the Iran University of Medical Sciences with an approved number 99-1-2-18543 and ethics code IR.IUMS.REC.1399.719

Written and verbal consent to participate in the study was obtained from each participant prior to conducting the educational intervention and qualitative interviews.

My submission was performed in accordance with the relevant guidelines and regulations (Declaration of Helsinki).

All methods were carried out in accordance with “[relevant guidelines and regulations].”

## Results

Participants were 17 earthquake victims in the west of Iran, consisting of 7 women and 10 men. Two-thirds of them were below 50 and one-third above, with a mean age of  $45.11 \pm 12.61$  years. Most of the participants were married (70%) and literate (82%). About half of them had family members who died in the earthquake. The majority of the participants had a kind of damage caused by the earthquake.

The data analysis led to the determination of the needs of stricken people in the west of Iran for primary health care services as four main categories, namely, health services, mental health, social health and health management, and 14 sub-categories. The following section is about the categories and subcategories [Table 1].

### Health services

#### Health education

One of the main parts of the health care system is educating and promoting, which is the task of health care providers.

One of the participants said: “To prevent epidemic-prone diseases in relief camps, we had to increase the chlorine level in the potable water and train face-to-face and by internet, how to boil water and wash up hygienically. Educational pamphlets were also distributed in this field.” (Interview No. 5: middle-aged, male, health center employee).

#### Environmental health

Controlling environmental health is one of the factors that affect the physical, mental and psychological health of the population. During natural disasters such as floods, earthquakes, etc., the local authorities lose control for a while and the health of the population becomes in serious danger. According to previous studies, attention to environmental health factors is one of the most significant concerns of the people and the priority of health officials after the events.

One of the participants explained about the waste collection: “Initially, nobody took into account waste collecting, but the days after, due to debris and perishable materials, volunteer groups trained people to collect the waste.” (Interview No. 7: young, male, student).

A participant said the following about the collection of animals carcasses, dead bodies, and wastes: “By an excavator, we dug a big hole for entombing the corpses collectively and made a family grave. The death certificate was issued. The photo and name of each decedent were attached and they were buried. Due to the prevalence of diseases, we buried the carcasses hygienically in a deep hole by sprinkling lime.” (Interview No. 13: middle-aged, male, clerk, the priest of the village)

One of the most significant needs after such disasters is immediate action to improve the pipeline water system. In such a situation, lacking clean water may cause epidemic-prone diseases.

One participant talked about the need for safe potable water: “After the earthquake, there was no potable water for about 20–30 days. We did not dare to use the well water, because it might have been polluted by the broken sewage system and caused microbial contamination. We used the bottled water for making tea and cooking, etc.” (Interview No. 1: young, male, employee).

One of the participants said, “During the first days, nobody collects or organizes the waste and no immediate actions have been taken. Garbage was spread everywhere. Volunteers collected and separated the garbage. After a few weeks, the responsible started thinking about managing a system. The bins were full of garbage, nobody took action to empty them. People were lucky that epidemic-prone diseases did not diffuse in these conditions.” (Interview No. 3, Yong, Female, student)

Sanitary disposal of sewage was one of the most significant problems in the earthquake camps. One of the participants said, “One of the most important needs and problems after the earthquake was sanitary bathrooms. The buildings were not safe, most of the people has lost their homes and residence and were living in camps and the weather was very cold. There were not enough public toilets.” (Interview No. 1: a middle-aged, male, teacher).

The old or new houses were not resistant enough to earthquakes. According to one of the participants, “The cost of housing was too high. People were already in trouble. The banking system did not provide adequate assistance. Local institutions do not assist to get the loan.” (Interview No. 16: middle-aged, male, orchardman).

#### Food safety and health

According to some participants, “There was a severe food shortage.” (Interview No. 3: young female, student)

#### Prevention of epidemic-prone diseases

Disease incidence is a prevalent phenomenon after an earthquake.

Most people used canned food because cooking was not possible for the majority, but they had to eat it without heating or boiling. Thus, symptoms of stomachache and diarrhea were common. Different types of infant formulae were sent to the region, but some mothers didn't know what kind of formula was right for their babies; most of the babies became hungry or sick.

#### *Detergent usage*

For preventing the outbreak of contamination, disinfectants, detergents, and sanitary items were required urgently.

One of the participants said: "There was not enough water for wash up in the stricken area, concerning to our periodic condition we could not manage our personal health care properly." (Interview No. 29: young, female, homemaker).

#### **Mental disorders**

Posttraumatic stress disorder (PTSD) is one of the prevalent and inevitable effects of earthquakes. Hereunder, some of the related issues have been recounted.

#### *Access to the psychiatrist and psychologist*

One of the effects of earthquakes is PTSD, which can cause complicated disorders if they aren't treated properly. People with PTSD have intense, disturbing thoughts and feelings related to their experience that last long after the traumatic event has ended. Some of the consequences of PTSD are depression and anxiety. As the condition is so tough in the stricken areas, the person can't help him/herself, and thus needs medical and psychological care. Untreated PTSD can lead to chronic disorders. Therefore, trained medical staff is required on the site.

According to one of the interviewees, "We all had stress very long time after the event, and children were more affected by stress and fear, especially those who had lost their families or relatives. Unfortunately, we didn't have access to a psychiatrist or psychologist. People were depressed and anxious. We were all scared of the aftershocks. We were waiting for bad happenings, we were struggling with death, I did not suffer from tachycardia before the earthquake, but after the event, I felt likely to have a heart attack, I was scared intensely and my hands and feet were numb." (Interview No. 2: young, female, homemaker).

#### *Funeral and mourning ceremony*

In the earthquake-stricken areas, funeral and mourning ceremonies were not held according to the traditions. The majority of dead bodies were buried with delay, especially when a family had lost several members, so the mourning process was disrupted.

One of the interviewees said, "In this village, 27 people have died, and it was a trauma. More than one hundred persons died in Kueek village. Now when I think about that time, I feel a deep grief." (Interview No. 14: old, male, rancher).

#### *Psychological support*

Some participants stated, "Interruption in the financial and psychological supporting by related institutions and organizations very short time after the disaster made people disappointed." (Interview No. 3: middle-aged, female, student).

#### **Social health**

The findings of the social health category related to the needs of the participants were classified into three subcategories: empowerment, social support, and social participation.

#### *Empowerment*

In this regard, a participant stated: "Individual and collective tolerance and empowerment should be conveyed in the form of teamwork, workshops, and public training, for example, by broadcasting, which is very effective in calming and healing the trauma disorders." (Interview No. 7: young old, male, student).

#### *Social support*

Commonly after disasters, earthquake victims need social support. Social support sometimes encourages survivors to be active in the reconstruction process and solve their problems. One of the participants said, "Mamousta, a benefactor person in our village, told me: 'Dear, why don't you bake bread? Baking bread not only will calm your restlessness but also help others.' While I was baking bread, my mind gradually relieved, I felt my soul. I focused on work instead of grieving. After a few days, my anxiety was decreased." (Interview No. 15: old, female).

#### *Social participation*

In rural areas, for mending houses, people need assistance and financial support. The economic conditions of some of these victims were weak; they had lost their houses and a member (s) of their family or relatives. Usually, some governmental organizations or institutions aid in these situations. On the other hand, the traditional context and the ethnic culture in Kermanshah province was a good platform for promoting the culture of social participation in prevention and reduction of the harmful effects of the earthquake, and the aftershocks and planning the pre-disaster stage, participation in response operations, especially searching, rescuing, supporting in the occurrence and recovery phase, that is, organizing, rehabilitating, rebuilding and returning to the initial state. However, it is necessary to amend the attitude of the community, organizations, and officials about the



role and type of participation of people in dealing with natural disasters.

In one of the interviewees' opinions, "People should be organized by officials to support and supply the services. For Social empowerment, recognizing the needs and problems is very important. However, volunteers made good feelings in people and encouraged them to participate in the reconstruction of the region. The strong family and relatives' ties were a very important element in mobilizing locals and participating in the reconstruction of the earthquake-stricken regions." (Interview No. 7, young, male, student).

### Earthquake health management

According to some participants, the earthquake had detrimental consequences on vital economic and social functions, and the health system. Thus, the health system must be constantly ready to respond to these incidents in a timely and effective manner. People's experiences emphasize the importance of prevention and reducing disasters. This is the point of intersection between public health and disaster risk management. The participants' experiences in this study indicated that the sense of responsibility was not adequate and the officials should be conscious about urgent reactions. A summary of studying about the experiences of earthquake victims is shown hereunder with emphasis on health issues.

#### *Post-earthquake urgent action*

According to the participants, this category included the following subcategories: vaccination, spraying and disinfection of the area, rapid evaluation of the pathogens and risks, detection of the ills and injuries and caring for them, establishing the statistic system and reporting of diseases and deaths, and eventually evaluating the stock of water and food, etc.

According to one of the participants, "Some health care centers were damaged, then medicines, vaccines, and serum were supplied by refrigerator trucks." (Interview No. 13: middle-aged, male, clerk, the priest of the village).

#### *Taking care of the vulnerable populations*

In this study, participants mentioned several groups of vulnerable populations:

##### Women

One of the participants said that, "During the inconstant situation, women without any financial and social supports were in difficulties, and sometimes they have been abused." (Interview No. 4, young, male, military personnel).

##### Children

One of the participants said, "children who have lost their family and due to the PTSD have had serious

problems and did not receive adequate attention." (Interview No. 3: young, female, student).

##### Senior Citizens

One of the participants said, "The majority of aged people suffered diabetes, high blood pressure disorders, the absence of medicines and health care facilities and adequate alimentation. Due to their special conditions, they didn't receive enough care." (Interview No. 8: middle-aged, male, employee).

#### *Creating a medical system in crisis*

Based on findings, many psychological disorders appear some months after the incidence of disaster so the attendance of psychologists in the region is required.

The most significant issues based on the participants suggestions are explained below.

#### *Dispatching specialists in different medical fields to the site*

Immediate dispatch of specialists from different medical fields, and well-equipped medical centers for 24 hours services are required.

#### *Surveillance, follow-up, and surgery*

The findings of the study indicated the consideration for the need for ills and injuries for clinical treatments, surgery, and follow up.

#### *Outpatient clinical procedures*

Regarding the data, helping with outpatient treatments, dispatching the critically injured, caring for them, rehabilitating them, and sharing decisions with people can be effective in dealing with the effects of the disaster and improving these conditions.

#### *Quick dispatch of the critically injured to other cities*

"There was no hospital for the wounded people. The military force came to relief that night. The landslide had blocked the roads. The army aviation dispatched the wounded persons by helicopter. People were anxious. The situation was terrible. There were not enough doctors and nurses." (Interview No. 16: middle-aged, male, orchardist)

## Discussion

The purpose of this study was to explain the primary health care needs of earthquake victims in the west of Iran. Exploration of the health care needs after the incidence of disasters is important for planning and betterment of such situations. The participant's health care needs were classified into four main categories according to the data.

### Health services

This section was divided into several subcategories, which are listed below.

### *Health education*

Participants in this study believed in training health practices like boiling water and regular wash-up as an important preventive factor in epidemic-prone diseases.

A study, done by Pascapurnama DN *et al.*<sup>[17]</sup> in 2018, about natural disasters in Indonesia indicated that a lack of awareness about health care in disaster-affected areas led to epidemic-prone diseases. This knowledge and information should be applied in daily life. The beneficiaries, including public health organizations, who are responsible for providing health training, should have adequate information about the issues and try to train communities. The training should not be restricted to first aid. It should include promoting awareness about vaccination and the importance of post-disaster issues. Disaster educational programs and exercises are recommended among the health staff in health-care facilities.<sup>[18]</sup>

### *Environmental health*

Environmental health challenges in Kermanshah earthquake, were very significant in the opinion of the participants. Supplying primary needs such as potable water, sewerage disposal, and shelter were among the essential needs. Participants mentioned the lack of potable water after several weeks of the incidence of disaster. The muddy and polluted water had made people anxious and worried. According to some participants, environmental health was poor, rubbish was everywhere, and after a while, people voluntarily collected them. On the other hand, some participants expressed their concerns about the need for repairing the sewerage system because well-waters could have gotten polluted by the broken sewage system.

Some findings of the present study indicated that the sewage disposal system in these areas has been destroyed. For example, 12% of people had to use unsanitary toilets, which increased post disaster environmental pollution.<sup>[19]</sup> Natural disasters such as earthquakes always threaten lives. According to some studies, selecting temporary housing sites is a crisis management measure for earthquake victims in Iran. The procedure for finding and preparing sites like schools or green spaces have begun, and training and informative courses are held to acquaint people.<sup>[20]</sup>

Most participants in the study expected the government to provide a suitable settlement for them until the situation returned to normal, and supply them with essential needs like food, water, and medicine.

### *Prevention of epidemic-prone diseases*

According to some studies, in natural disasters, especially earthquakes, chances of outbreak of epidemic-prone diseases increases. Insufficient control, contaminated

water and food resources, limited provisions, and negligence of personal health care are the main causes. Isolation of the patient, injuries, and animals, prescribing antibiotics and applying the detergents, and planning for training and furnishing of urgent response operation are recommended.<sup>[21]</sup>

### *Food health*

According to the findings of the present study regarding nutrition and food in earthquake conditions, inadequate food, inappropriate conditions for keeping food safe, and insufficient infant formula cause malnutrition in infants and the elderly. Access to adequate food, based on family size and other factors, was important for most of the participants. The majority of them subjected this matter, and a practical program for the same should be planned.

### *Use of hygiene products*

Some of the most important demands were for disinfectant, diapers, sanitary napkins and infant formula, baby bottles, and pacifiers. These needs vary widely depending on different factors in population groups such as gender and age. According to the findings of the present study, after the occurrence of a disaster, it was difficult to acquire the specific types of infant formula. Sometimes, for example, there was no infant formula, baby bottle, and pacifiers, which led to mothers complaining in some papers. Similar to the results of the present study, adequate attention should be paid to feeding of infants during a crisis: During disasters, health care workers should encourage mothers to breastfeed and closely monitor the distribution of unhealthy formulas.<sup>[22]</sup>

Some studies have pointed out that keeping a proper and sustainable supply of medical materials and health care services, including drugs, vaccines, and hygiene materials is very important during a crisis. To avoid undesirable consequences, a constant supply of resources such as medicines and other daily necessities should be considered.<sup>[23]</sup> According to the findings of this study and the mentioned needs, during the catastrophe of eastern Japan on 11 March 2011, which resulted in mass casualties, the Japan Medical Safety Research Organization established a multi-organizational council and provided numerous medical supplies as medical assistance to survivors.<sup>[24]</sup>

### *Mental health*

Usually, natural disasters in any place cause some issues in the community. PTSD, after experiencing natural disasters, is an issue that has particular importance and needs psychological help.

### *Access to psychologist and psychiatrist*

In some studies, the help of psychiatrists, psychologists, and advisors have been mentioned in natural disasters. Some international and national studies showed that

PTSD is one of the inevitable effects of experiencing natural disasters. Therefore, one of the topics of post-disaster recovery planning is consulting with psychologists, psychiatrists, and social workers.<sup>[25]</sup>

#### *Funeral and mourning ceremonies*

Findings of a study about the mental health of earthquake victims of the 2003 Bam earthquake in Iran indicated that some actions had been taken, like entombing dead bodies, getting to gather family members, and informing others, but these proceedings were not held in time and were mostly symbolic.<sup>[26]</sup> The death of numerous members of the same family had caused severe trauma disorder to survivors; they had to entomb the dead bodies without religious and mourning ceremonies, and bury them in mass graves. The survivors couldn't complete the mourning process psychologically.

#### *Psychological support*

In some countries like Nepal, consultants were trained in a short period and within a reasonable budget, to help heal PTSD patients among earthquake victims.<sup>[27]</sup> Creation of a comprehensive and sustainable post-earthquake mental health system can be seen in other countries, such as Haiti.<sup>[28]</sup>

#### **Social health**

The present study indicated that earthquake victims need social support to rehabilitate and overcome problems caused by PTSD.

#### *Social support*

The study in the 2008 Sichuan earthquake in China indicated that non-governmental organizations (NGOs) in China, proceeded with the developments for improving civil society by strengthening local communities which led to community organizations, civil society participation, and community support in local governance.<sup>[29]</sup>

#### *Community participation*

The study in 2016 in Turkey revealed how trust, pre-existing relations, interdependence, knowledge, and resources can contribute to reducing suboptimal disaster response.<sup>[30]</sup> Participants in the present study referred to some social health items such as life skills, psychological resilience, and other components of training that strengthened their skills. These issues had not been considered during the Kermanshah earthquake specifically.

In the study of Xiao Zhou *et al.* in 2016, 397 adolescents living in Lushan County, China, who were had affected by the Ya'an earthquake were investigated. The results showed that social support reduced PTSD by increasing self-esteem. PTG was also increased through hopelessness.<sup>[31]</sup>

#### *Empowerment*

Regarding post-traumatic empowerment, especially during earthquakes, in 2020 a study by Chen *et al.*<sup>[32]</sup> stated that community empowerment began after the severe earthquake in Taomi Village. This village transformed from traditional agriculture into an eco-village in four stages. The community organization and practical operation in Taomi eco-village have continued, and the Taomi village continues to grow, transform and expand. Five factors affecting community empowerment are community consciousness, learning empowerment, reconstruction issues, communication and coordination, and external support.

The results of the present study emphasized that due to the climatic conditions of earthquake-stricken Kermanshah province such as natural resources, orchards, mineral springs, archeological and tourism sites, and other facilities, establishing national and expertise programs to increase the locals' position and cooperation between local institutions and related governmental organizations will led these villages to transform into eco-villages. The rich tourist attractions, opportunities for entrepreneurship and the use of local products can empower these residents. According to the authors of the present paper, the phenomenon of eco-village can be the strong point and innovation of this research.

During 2016 and 2017, two studies were conducted in Iran in this field to create a compatible model for Iranian villages using a survey of eco-villages around the world, which had the characteristics of local and regional flexibility and also generalized to most parts of Iran which seemed to be consistent with the present study.<sup>[33,34]</sup>

#### **Health management in earthquake**

Governance in the health system, being multi-faceted, risk governance in the health system evolves within the framework of government relations, citizens, civil society, and political and economic conditions.<sup>[35]</sup> Due to the inadequate development of some health infrastructures in underdeveloped and developing countries, disaster management experts and health policymakers should collaborate before and after the disaster to reduce health problems and challenges when a natural disaster occurs, particularly by diminishing the number of morbidities and mortalities.<sup>[36]</sup>

#### *Urgent actions in crises*

Recovery of a health system after a disaster is a complex and dynamic process. It is often formed based on the instructions of the World Health Organization's (WHO) health systems that can lead to a stronger and more effective health system for long-term sustainable development.<sup>[37]</sup> According to the WHO standards, the

**Table 1: Identified Codes, Sub-category and Categories about Primary needs of health care services for earthquake victims in the west of Iran**

Category	Sub-category	Code
Health Services	Health education	Population
		Health staff
	Environmental Health	Waste disposal hygiene management
		Water hygiene and sanitation
		Correct recycling practices
		Sanitary disposal of sewage
		The health of dwelling houses
	Food Safety and Health	Fresh food
		Canned food
		Digestive diseases
	Prevention of epidemic-prone diseases	Respiratory diseases
		Skin Diseases
		Common human and animal diseases
		Transmitted by insects, rodents, and reptiles
	Detergent usage	Basic medicines
Infant Formula, Baby Bottle, and Pacifier		
Diaper & sanitary napkins		
Disinfectants		
Mental Health	Access to the Psychiatrist and Psychologist	Need a skilled psychologist in the field of crisis
		Access to a psychiatrist
	Funeral and mourning ceremony	Empathy with the families of the deceased
Psychological support	Holding mourning ceremonies to console families	
	Psychological counseling by a counselor or a psychologist	
Social Health	Empowerment	To promote empathy and sympathy for each other
		Problem-solving skills training
		Support to help the people of the region
	Social Support	Self-care education
		Establish collective cooperation for the reconstruction of earthquake-stricken areas
	Social participation	Forming grassroots groups to provide relief
Earthquake Health Management	Post-earthquake urgent action	Participation of officials and people in the reconstruction of the region
		Forming popular groups in the village to visit families and the injured
		Required vaccination
		Spray and disinfection
		Urgent evaluation of the pathogens and risks
	Taking care of the vulnerable populations	Identification and finding ill and injuries
		Caring for vulnerable groups
		Treatment the patients and injurers
	Creating a medical system in crisis	Disease and mortality registration and reporting system
		Addressing the situation of the elderly the patients and injurers
	Addressing the situation of the disabled	
	Dispatching specialists in different medical fields to the site	
	Surveillance, follow-up, and surgery	
	outpatient clinical procedures	
	Quick dispatching the critical injuries to other cities	

level of emergency preparedness in Iran is average. The importance of emergency departments in neighboring provinces' hospitals is very crucial in controlling disasters, urgent and unexpected situations, for programming the alterations in the structures, manpower, strengthening hospitals, etc.<sup>[38]</sup> According to the results of this study, the absence of coordination between departments, the lack of connection between different organizations for solving medical problems, and the absence of trained

personnel in the disaster area were evident. From the first few hours, there were no plans of controlling the situation, only some services were supplied occasionally, and medicines were not distributed in a well-ordered manner, and the injured didn't receive medical relief. After the Nepal earthquake, in April 2015 and while relief efforts were diminished, health officials faced ongoing challenges of supplying health services and dissolving problems with reports of monitoring



diseases. For dissolving these shortages, they dispatched trained local doctors to the earthquake-stricken areas. These physicians successfully managed public health challenges in the post-disaster phase.<sup>[39]</sup>

Referring to previous studies, it's imperative that physicians be dispatched from other parts of the country to stay for a while in the disaster area and medical centers equipped with ultrasound or physiotherapy be established.

### *Creating a health care system in natural disasters*

As Iran is an earthquake-prone country, studies on crisis management have greatly emphasized the creation of a proper foundation for managing the aftermath of disasters.<sup>[40]</sup> According to the opinions of some participants, in all stages of the earthquake and even aftershocks, it seemed necessary to pay attention to the following issues: dispatch of medical specialized groups, especially psychiatrists and psychologists, monitoring and following inpatient clinical procedures, outpatient clinical procedures *in situ*, and urgent dispatch of the critically injured to other cities.

### **Limitation and recommendation**

Limitations of this study include conducting the study in a specific area, distrust of some participants towards the interviewers, lack of easy access for participants due to the impassability of the area, most earthquake victims being able to speak only Kurdish, and the unfavorable living conditions of several participants. It is recommended that a qualitative study on the victims of earthquakes in other areas and involving earthquake victim volunteer be done.

### **Conclusion**

In this study, the primary health services for earthquake victims were categorized into four main groups: health services, mental health, social health, and health management, along with 14 subcategories. Programing to create an eco-village and predicting the accurate and multifaceted plans and the establishment of ready-to-serve headquarters with accurate and timely facilities at local and national levels are essential.

### **Declaration**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### **Acknowledgements**

This study is a part of Ph. D. thesis with the ethics code of IR.IUMS.REC.1399.719 approved by the research and technology Deputy of Iran University of medical sciences. All persons who participated in the research gave their informed consent prior to their inclusion in the study. The authors would like to thank all the participants, their families, and all officials, who helped us in this research.

### **Financial support and sponsorship**

The research was supported by grant No. 99-1-2-18543 from Iran University of Medical Sciences.

### **Conflicts of interest**

There are no conflicts of interest.

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