Health management in past disasters in Iran: A qualitative study

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Abstract

Introduction: Disaster management is relied on prediction of problems and providing necessary preparations in right time and place. In this study researchers intended to explore passed experiences of health disaster management.
Methods: This study conducted using qualitative content analysis methods. Participants were selected purposefully and data were collected through interviews, observation, and other documents.
Results: Transcribed data from 18interviews, field notes and other documents were analyzed. In data analysis reactive management was emerged as main theme. It was included some categories such as; 'exposure shock', 'non deliberative relief', 'lack of comprehensive health disaster plan', 'lack of preparedness', and 'poor coordination in health service delivery' and contextual factors.
Conclusion: The results clarified deep perception of participants' experiences about health management in disasters. The professionals' and non-professionals' emotion-based reactions and behaviors, if accompanied with deficiencies in planning and preparedness, can lead to ineffective services, and aggravates the damages.

Keywords: Disaster, Health, Health management

Introduction

The number of reported disasters and the extent of their impacts show that most disasters are inevitable, and with changes in the environment, resources, population, etc, communities are increasingly affected by disasters [1, 2]. The health domain plays a major role during disasters in reducing mortality and injuries, thus the first and foremost demand during disasters is consistent, integrated, accessible and coordinated health services [3], which bring the health to the top agenda of disaster management.
Recently Iran has achieved considerable success in terms of emergency management in health sector, but many rooms for improvement are left and studies conducted in this area have mentioned the lack of a countrywide comprehensive plan for health in disasters and emphasized on preparation [3-8].Since there is no room for trial and error when disaster strikes, it is important to be prepared for effective field performance and to develop guiding models. Therefore, the best strategy to minimize damages, losses and sufferings to people in such situations is to take advantage of past experiences for the best performance in future disasters. In spite of increasing trend of related studies in Iran, adequate attention has not been paid to grasp participants' perceptions thus their experiences and main concerns at times of disaster have been remained insufficiently clear[3-5,7].
Thus, in the area of health researchers decided to conduct a qualitative study to explore people's experiences of health management in past disasters.

Methods

This study had been designed based on qualitative content analysis, which is a suitable method when new areas are to be investigated in an explorative manner or if the area needs to be explored from a new perspective (9, 10).
The participants were selected by purposeful sampling (9) among those who were willing and be able to communicate with the interviewer, had been affected by disasters, and had experience of receiving, managing or providing health services in recent disasters in Iran such as earthquakes of Bam and Zarand in Kerman, and Lorestan.
Participants were 18 individuals ranged from 28-57 years of age with three types of disaster experience (health care managers, health care providers and receivers).
The main strategy for data collection was in- depth and semi-structured interviews beginning with general questions, gradually progressing to more specific ones. This kind of interview was

appropriate because of the flexibility and depth to qualitative research (9, 10).
Each interview began with a broad question, e.g. "Could you explain your experiences regarding health care services after the earthquake?" or "Tell me about what happened after that incident for you as an injured person." 'What was needed there after the disaster?' and 'How were these needs met?' and for policy makers and health care providers' questions such as: "Could you describe if there was any problem for delivering effective health care?" and "Which issues were experienced by affected people after disaster? "
Complementary probing questions were added according to the reflections of each participant, concerning to prior experiences of disaster, perceptions of health care and individual needs.

Time and place of the interviews were determined by study participants. Interviews were conducted individually and recorded with consent of participants, and after completion, transcripts were taken down verbatim. Duration of interviews, depending upon participants' conditions and mutual agreement was between 40 and 60 minutes.
The number of participants determined by saturation (10), which means the researcher, concluded that collected data was repeated, new code wasn't developed or existing codes were not extended.
All interviews were transcribed verbatim and transcripts of interviews with field notes and other documents were analyzed using qualitative (latent) content analysis (11).
The analysis started by identifying units of meanings that were essential to the participants' experiences and were extracted from the statements/transcript. The codes were compared based on differences and similarities and sorted into categories and subcategories that were discussed within the research team; appropriate themes were extracted from the data (11).

Data trustworthiness:
To obtain rich and reliable data in this study, the researcher endeavored to use accurate selection of key informed participants, allocate sufficient time for interviews, and use different data resources (interviews, observation, and other documents), and memos. The researcher tried to establish a friendly relationship with participants, and conduct interviews in an appropriate atmosphere.
Triangulation of researchers in the research team helped to take into account different perspectives when analyzing the data. Also, the researcher presented extracted codes and initial categories for member check by some participants and peer check by two faculty members who were not part of the research team.

Ethical considerations:
In this study the following items were considered: obtaining necessary permissions letters, explaining aim and process of the study to participants and obtaining their written informed consents, emphasizing confidentiality of data, complying with ethical principles in observation and recording of field notes.
Participants at each stage of the research had the right to withdraw.

Results
In this study, 18 participants were interviewed. By examining codes, data were classified into 22 categories. Analysis of data led to extraction of a main theme. The extracted theme was "reactive management" that included categories "exposure shock", "non deliberative relief", "lack of comprehensive health disaster plan", "lack of preparedness", and "poor coordination in health service delivery "and also there is a category as contextual factors.

Reactive management
Occurrence of an incidence or a disaster is a tough experience that is accompanied by injuries and damages to lives/finances/health, and imposes huge stress and psychological pressure on the victims and other involved individuals. It shocks people, thereby, influencing their response and behaviors. People's way of confronting and success in disaster control, largely depends on planning and preparation. Based on experiences of study participants, reactive management is reactions and behaviors of professionals and non-professionals in exposure to a disaster and its impacts without any pre-developed plan, and include sub-categories of exposure shock, non deliberative relief, lack of comprehensive health plan, lack of preparedness, and poor coordination in health service delivery.

Exposure shock
After disaster, particularly when it was highly tragic, as expected many may had lost their loved ones or suffered irreversible damages, and this had caused shock that participants described it as unique and even the worst experience in their lives.
Once disaster strikes, people displayed a range of emotional reactions, they were perplexed and in shock then they were crying or excited and tried to rescue their loved ones despite of physical injuries.

"Before the incident my daughter was in my hug. When I realized my kid was not with me, I tried to find her, my head was injured and I couldn't move right hand. I moved tiles and bricks around me, and saw my daughter under the rubble. It was shocked me." [Participant No: 16, A mother].

Accumulation of corpses and rubbles intensified people's reactions. Survivors were crying and wailing besides dead bodies of their loved ones.
These reactions provoked the locals to rush to the rescue emotionally. Because the first rescuers were relatives and locals, due to their reactive behaviors and lack of knowledge about correct rescue procedures, their actions not only were ineffective, but also caused further injuries to themselves and others.

"I was trapped under the rubble, and my back had been hurt, neighbors came to pull me out, the first person was my neighbor, … instead of taking the rubble off my back first, they just pulled me out as soon as they could, suddenly I felt a sharp pain in my back" [Participant No:17, A man with SCI].

Disaster situation surprised the health personnel in the same way. In addition the personnel were confused because of the increased work load. The influx of injured and their companions to hospitals caused excitement and fatigue in personnel which had reduced their efficacy.

Non deliberative relief
The rescue and relief teams with no predetermined plan of action, clear job description, and lack of necessary and sufficient facilities/equipment, crowded the area and caused more confusion and chaos among themselves and the injured. So they tried to do whatever they could. This unplanned presence, with no adequate equipment, not only reduced their efficacy, but also made lack of coordination and lack of available resources.
Also, lack of clear operational protocols, and necessary equipment for correct removal and transportation of the debris and the injured, many of the injured had to bear further damage. This performance portrayed a picture of inconsistency in rescue and relief operations.

Lack of comprehensive health plan
Although participants stressed the developing trend of health sector in crisis management, there were deficiencies in planning that caused problems in the field which confused health care providers. For example there was lack of planning to cover all walks of the society; there was no planning for groups with special needs such as mentally retarded children, orphans, and mentally patients.
"… we face some mentally retarded among survivors that we had no plans for them. We actually didn't know what to do for them ..."[Participant No: 10, A social worker].

Furthermore, long term care such as rehabilitation services which is important to complete the emergency care was provided without a protocol. No planning for these care and overemphasize to the acute therapeutic approach of the healthcare system caused these services were overlooked at the time of disaster.
Active screening programs helped to identify the needs, service providing and follow-ups. Such programs were necessary for victims who did not seek help, but they were run with delay. Therefore, most of the victims' needs were not met for a long time, and they could not return to their normal life.

Lack of preparedness
Locals and the relatives were the first rescuers or responder in disasters. Meanwhile, their unawareness about observing safety and rescue measures aggravated the injuries.
On the other hand health providers believed that lack of previous familiarity with such situations and impracticality of field exercise made the personnel unprepared for an effective and appropriate performance.

"Before this incident, we weren't familiar with these events. Many of my colleagues and I haven't heard of these concepts, we didn't know what to do in such situations, what's priority, what's right or wrong… so, we worked according to our judgment and what we thought right." [Participant No: 9, A nurse]

Many lay people and volunteer groups began to field experience/learning. Lack of preparedness caused not only ineffective service provision but also made anxiety and distress for the providers.

'Many a times we didn't know what to do. There was no one to ask the right way. Sometimes were totally confused. I thought I was doing something good, but later I thought I would have done better if I had known many things, maybe my services were better or I could have prevented many things…' [Participant No: 9, A nurse]

Coordinating of many activities in the field needed preparation, so lack of preparedness caused interference in service provision, and duplication efforts.

'…everybody was busy with his affairs. We went to an area and saw many other groups had gone there and another region there was nobody. One didn't get any services for days, and another got more than enough services. We didn't know what each person is doing.' [Participant No: 10, A social worker]

Poor coordination in health service delivery
Most of the participants emphasized on a lack of coordination which affected the quality of providing services.

Unfamiliarity of people with their teams caused the teams to be unaware of their team's capabilities, and hence render inappropriate intra group coordination.
According to the participants, other factors affected intra group coordination including poor team spirit and deficiencies in implementing duties on the basis of their determined positions.
The presence of different teams and volunteers made inter group coordination harder and less. The groups did not have any prepared or in-situ plans to familiarize and coordinate with each other.
Another factor that disrupted inter group coordination was lack of registration system and central dispatching system. This condition impeded the flow of information transfer among the groups.
Lack of intra group and inter group coordination led to unclear roles within groups and functional conflict and duplication efforts between groups.
The outcomes were inappropriate distribution of humanitarian affairs on the basis of people's need at a certain time and inappropriate use of resources.

"...At first, a patient could have, for example, two or three shots of dexamethasone by two nurses, or we saw a patient who got 3-4 shots of tetanus antitoxin… and a patient who got no shots." [Participant No: 12, A physician]

Another consequence was the disruption in transportation of patients and its subsequent problems on providing services, and hence on health of the victims and their families.

Contextual factors
Contextual factors were as an inhibitors or facilitators in disaster management which included characteristics and nature of the disaster, function of the infrastructure, the cultural context of the society, and accessibility and feasibility. These factors will be discussed in this section.
Some of the characteristics of event that participants mentioned were suddenness, extent, severity, type and time of the incident.
The participants believed that suddenness of the event shocks most people, and causes emotional reactions. Furthermore, the intensity and depth of the disaster affects not only the type of emotional reaction, but also the quality of people's and system confrontation with incident.
Climatic conditions also affect the performance.
The functioning of the infrastructure including healthcare infrastructure and hospitals are important in providing, restoring and maintaining people's health.
Destruction of hospitals caused not only problems in healthcare providing, but also made lack of security and vulnerability in people. They were confused about transferring patients.

"Hospital is so important for a city. When you have a patient, you go there. When the hospital itself is like that, then what?... If gold rusts what then can iron do?.... When people reached the hospital, they were horrified to see its ruins." [Participant No: 8, A father in disaster area]

The culture, emphasized by most participants, as an important factor is decision making. The cultural context affected reaction to disaster, disaster coping strategies, and family life management.
"I have a friend that I talked with on the phone. She said: I don't know what to do; should I commit suicide?, she felt guilty that her kids were dead and she is alive. I asked her to go to a psychologist, but she turns it down because she fears her mother-in-law might say she is crazy, so her hubby can happily get married with another woman…. She said: no, I don't want our relatives know about it… people think like this." [Participant No: 14, A citizen in disaster area]
Participants mentioned problems in transporting injured, which affected the quality of the services and ultimately people's health.

'When there is no plan for transferring patients, treatment will happen by chance, I mean, the patient who went to a good center was treated well. The one that went to a crowded hospital, they couldn't take care of them and mortality rate went up…' [Participant No: 7, A phisician]

Also in continue of disaster pass, many considered difficult accessibility and feasibility to care centers as one of the most important reasons for lack of their following up the treatment in different fields.

Discussion
According to our results the theme "reactive management" was extracted that included sub-themes "exposure shock", "non deliberative relief", "lack of comprehensive health disaster plan", "lack of preparedness", and "poor coordination in health service delivery "and there is a category as contextual factors.
All people impacted by a disaster will be affected to some extent. Our results showed an unexpected event exposed people with conditions that changed their mental image of life instantly, and exposed them to crises such as separation, loss, death of the beloved and relative, internal conflict, stress induced damage, loss of possessions, homelessness, etc.
People showed different types of reactions, ranged from confusing behaviors under the stress to obvious symptoms of phobia and hysteria, which were less common. Most people showed confusion and disbelief, and focused on survival and health of themselves and their beloved. In a phenomenological study by Keene (1998) after

Dakota flood, one of the main themes extracted was 'shock and disbelief' in survivors. The participants remembered the disaster as an experience they had never had in their life. (12)

Documents mention a range of post disaster physiologic, psychological, social, behavioral, emotional, cognitive and spiritual reactions in survivors (13- 15). According to our results, the feeling of unity, cooperation and heroic behaviors increased immediately after disaster. Survivors did extra work to help relatives and others. The post disaster confusion led people to emotion-based rescue behaviors. American Red Cross recognizes 4 phases of heroic, honeymoon, disillusionment and reconstruction as emotional reaction to disaster (14, 16). Primary after disaster reactions and behaviors in the present study conform to the heroic phase, such humanitarian and altruistic behaviors exist in both survivors and rescuers (14).However, as mentioned in the results, although in this phase the level of activity was high, the efficacy and quality of rescuing were low and more harmful, as in documents indicted, earthquake leaves a lot of victims with spinal cord injury in developing countries, such as 240 cases in Bam earthquake in Iran, and 600 cases in Northern Pakistan earthquake in 2005. Rescuers, especially locals and untrained people who excitedly and anxiously try to rescue more people are unaware of fixating the spinal cord and the techniques of moving people. Victims are pulled out of the rubble, moved and transferred without fixating spinal cord (17-19). Evidently, the first rescuers should be sufficiently trained about the importance of immobilizing and correct transferring of victims in order to prevent more injuries.

This study indicated that the rescue and relief without planning, preparation and facilities incurred consequences such as confusion and poor coordination. In line with the results of this study, other studies in Bam disaster reported that participants had not received enough training about rescuing and treating in disasters (8, 20). Based on the results of this study, lack of trained and prepared teams for services, and lack of standard operational protocols had caused problems for rescuing and transferring the victims and increased the likelihood of injuries. Djalali (2011) recognized lack of Disaster Medical Assistance Teams (DMAT) as an obstacle in providing pre-hospital services during disasters in Iran (4), absence of such trained and prepared teams during the acute post disaster phase that can quickly provide treatment services and transfer the victims affects triage, treatment and transfer of patients (4,21).

From health point of view, disasters cause extensive and serious damages in a short time, and impose huge pressure on healthcare centers. Therefore, planning should be done, measures should be predicted, and resources should be allocated to make sure that effective services would be available (7, 22), in this study, participants emphasized for disaster planning too. Khankeh et al (2006) emphasized on health management, and absence of a comprehensive plan, overlap and interference in providing services indicated problems in health management (7). A comprehensive plan would not only save lives, but also reduces the sufferings and enable an effective usage of the available resources (4). Djalali (2011) also revealed lack of a disaster management plan as the main obstacle to the medical response to earthquake (4). This does not exclusively occur in Iran. Bayntun in a systematic review of papers published after 2000 concluded a holistic health system approach to disaster management, which supported by the resolution passed at the World Health Assembly in 2011 aims to build health system resilience to protect immediate and long-term population health in the face of all-hazards disasters, has not been established (23).

A comprehensive plan is needed to cover all needs and opportunities before, during and immediately after the disaster, and the long period of post disaster recovery (16, 24, 25). The results of the study revealed that there was no planning for long and complementary care. In reports of other disasters mentioned although mortality, disabling injuries and long term disabilities are high but rehabilitation care is marginalized in planning and response to disaster (26-29) and during emergency phase, such services are provided much less because of the therapeutic approach of the responders and lack of rehabilitation perspective (28, 30). Meanwhile, these specialists can have positive outcome on health during all phases of the disaster (28, 31, 32). Therefore, planning for these services should be considered because even adequately developed services will face challenges without advance planning and preparedness (22, 27, 29, 33).

While responders are responsible not only for treatment and preventing further injuries, but also to help the community to rehabilitate, and achieve self-sufficiency, and improve living (24, 25,34, 35), however, the current study revealed that recovery phase has been less attended to in planning.

Disaster with every reason needs preparedness (36, 37). As the results showed, the first responders are family members, friends and relatives. Although local people play an important role in the first operations after the disaster, but without training, appropriate equipment and specialty they put themselves and others at higher risk of injury (25). Therefore, public's preparedness is the footstone of preparation programs that should focus on empowering the public in different activities.

The preparedness of healthcare providers that are responsible to provide healthcare services is really

important, so their higher preparedness equals reduced disaster-related mortality and morbidity (36, 37).However; this study indicated the healthcare professionals were not sufficiently prepared for disaster, so their efficacy and quality of performance reduced. Other studies confirm our findings in this regard (4, 7, 38, 39).

Care providers in this study said they were not familiar with concepts of disaster and its management, and they had field experience/learning. Nasrabadi(2007), in his study on Iranian nurses' experience in Bam earthquake revealed lack of preparedness in the participants. Furthermore, lack of knowledge and skills caused emotional distress in them while they were carrying out their duties (39). The participants of the present study experienced the same, as well. They felt the anxiety and stress due to inefficiency; therefore it is essential to devise a preparation and training plan for the personnel, for example in other studies has mentioned preparation programs empower nurses, and increases their confidence for response to disaster while lack of experience causes stress and fear (40, 41).

In this study, many participants recognized lack of guidelines for different situations. Such standard operating protocols in the field can reduce inefficiency and its subsequent consequences. Different studies have emphasized the importance of operational protocols and guidelines like professional protocols for transferring the victims and so on (28, 30, 39).

The participants of the present study mentioned lack of plan for managing groups with special needs. Such people have special needs and require special attention at different stages of disaster (13, 42-46).

Participants emphasized on the importance of coordination in healthcare services delivery and poor intra group and inter group coordination. Khankeh (2011) studied challenges of healthcare filed during disaster using grounded theory method. He recognized lack of planning; poor organizational management and coordination were the most important obstacles in this field. Accordingly, it was suggested that planning before disaster, organization and coordination were vital factors for a successful response (3). Poor coordination is one the important problems mentioned in other disasters. For example, different studies recognized coordination challenges in healthcare after tsunami 2004. Of the most important challenges was the multiple responders with different objectives and missions (47-50), emotion-based performance (50), and information sharing (47, 50).

Results showed that poor coordination in health care providers resulted consequences in resource allocation, service delivery and victims' health. According to our results, in Nasrabadi study (2007) indicated due to poor team work and poor coordination between groups, some victims received good healthcare services, and some were overlooked (39).

Based on the different documents, it is revealed that preparedness based on advance planning and providing coordination are important key factors for effective confrontation with disaster.

Regarding the contextual factors, the suddenness, extent, intensity, type and time of incidence the disaster affect the manner of confrontation of people and the involved system. The stress that is experienced depends on the characteristics of the disaster such as its intensity, magnitude, extent, predictability, preventability and controllability (13). Suddenness shocks people more and cause more emotional reactions. Furthermore, this study revealed that the intensity and depth of the disaster not only affected type of emotional reactions, but also affected the quality of the confrontation by people and the system. Therefore, countries at risk of disaster should plan in advance for the services and be prepared (3, 21, 22, 23) because the available services might not be able to respond efficiently.

The infrastructures can effect on people' health (24), given the theory of the systems, and due to the dependence and relationship between systems, they affect each other. When part of a system is destroyed or changed after a disaster, it affects other systems including human systems (51). The results of the present study revealed that hospitals played an important role in terms of not only providing health but also creating the feeling of security or vulnerability in people.

The results indicated that family and community culture was the effective factors in disaster exposure and recovery. These cultural factors affected on choosing the strategies for adjustment and family and marital management, for example, culture can affect social relationships, expecting support and as a result, recovery after the disaster (52-54).

In this study, health management during disaster was studied. The study revealed a clearer picture of people's experiences with a deeper understanding of their experiences.

'Disaster exposure' was depicted, and the concept of 'reactive management' was applied for the first time in this study. This study revealed that emotion-based reactions and behaviors of professionals and non-professionals, if they are accompanied with deficiencies in planning and preparedness can lead to ineffective services, and aggravates the damages. Such exposure behaviors in this study were defined as 'reactive management to disaster'. Some effective factors such as contextual factors have been reported.

We hope that this study can pave the way for better, quicker and more effective disaster management.
Finally, it is recommended that a study be conducted with grounded theory approach in order to investigate the process of healthcare service in response to disasters.

Authors' Contributions
MN & HRKh conceived the study, designed and obtained data. GhRM assisted in the conduct of the study and data collection. MAH & ZPY participated in data collection and analysis. All authors participated in data analysis and interpretation.MN drafted the manuscript and all authors contributed to its revision. All authors take responsibility for the paper as a whole.

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Competing interests
'The authors declare that they have no competing interests.

References

1. Hyogo Framework for Action 2005.2015: Building the Resilience of Nations and Communities to Disasters [Online]. 2005; Available from: URL: http://www.unisdr.org/wcdr.
2. Guba-sapir D, Femke V, Below R, Ponserre S. Annual Disaster Statistical Review 2010: The Numbers and Trends. Ciaco Imprimerie,Louvain-la-Neuve(Belgium)2011; Available from: URL: http://www.cred.be/sites/default/files/ADSR_2010.pdf.
3. Khankeh HR, Khorasani-Zavareh D, Johanson E, Mohammadi R, Ahmadi F,Mohammadi R. Disaster health-related challenges and requirements: A grounded theory study in Iran. Prehosp Disaster Med 2011; 26(3):1–8.
4. Djalali A, Khankeh H, Öhlén G, Castrén M, Kurland L. Facilitators and obstacles in pre-hospital medical response to earthquakes: a qualitative study. Scand J Trauma Resusc Emerg Med. 2011 May 16; 19:30.
5. Djalali A, Hosseinijenab V, Hasani A, Shirmardi K, Castrén M, Öhlén G et al. A fundamental, national, disaster management plan: An education based model. Prehosp Disaster Med 2009; 24(6):565–569.
6. Ardalan A, Masoomi GR, Goya MM, Ghaffari M, Miadfar J, Sarvar MR et al. Disaster Health Management: Iran's Progress and Challenges. Iranian J Publ Health2009; 38 (1 Suppl.): 93-97.
7. Khankeh HR, Mohammadi R,Ahmadi F, Maddah SB, Ranjbar M, Khodaei M. [Health Management in Natural Disasters]. Journal of Rehabilitation 2006; 7(2):49-55. [Article in Persian]
8. Motamedi HMK, Saghafinia M, Bafarani AH, Panahi F. A reassessment and review of the Bam earthquake five years onward: What was done wrong? Prehosp Disaster Med 2009; 24(5):453–460.
9. Streubert HS, Carpenter DR. Qualitative Research in Nursing.4th ed. Philadelphia: Lippincott Williams & Wilkins; 2007.
10.Polit DF, Beck CT, Nursing Research Principles & Methods.7th ed. Philadelphia, Penns. : Lippincott Williams & Wilkins; 2007.
11. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today. 2004 Feb; 24(2):105-12.
12. Keene EP. Phenomenological study of the North Dakota flood experience and its impact on survivors' health. Int J Trauma Nurs 1998 Jul-Sep; 4(3):79-84.
13. Koenig K, Schultz CH. Disaster Medicine comprehensive principles and practices. New York: Cambridge university press; 2010.
14. Veenema Tener Goodwin, editor. Disaster nursing & Emergency preparedness for chemical, biological & radiological terrorism & other hazards. 2nd ed. New York: Springer Publishing Company; 2007.
15. Norris FH, Friedman MJ, Watson PJ, Byrne CM, Diaz E, Kaniasty K. 60,000 disaster victims speak: Part I. An empirical review of the empirical literature, 1981-2001. Psychiatry. 2002 Fall; 65(3):207-39.
16. Ursano RJ, Fullerton CS,Weisaeth L, Beverly R.Textbook of Disaster Psychiatry. New York: Cambridge University Press; 2007.
17. Priebe M.M. Spinal Cord Injuries as a Result of Earthquakes: Lessons From Iran and Pakistan.The Journal of Spinal Cord Medicine 2007; 30(4):367-8.
18. Rathore MFA, Rashid P, Butt AW, Malik AA, Gill ZA, Haig AJ. Epidemiology of spinal cord injuries in the 2005 Pakistan earthquake. Spinal Cord 2007; 45 (10): 658-663.
19. Mirhashemi S, Ghanjal A, Mohebbi HA, Moharamzad Y. The 2003 Bam earthquake: Overview of first aid and transport of victims. Prehosp Disast Med 2007; 22(6):513–516.
20. Saghafinia M, Araghizade H, Nafissi N, Asadollahi R: Treatment management in disaster: A review of the Bam earthquake experience. Prehosp Disast Med 2007, 22(6):517-521.
21. Kondo H, Koido Y, Morino K, Homma M, Otomo Y, Yamamoto Y, Henmi H: Establishing Disaster Medical Assistance Teams in Japan. Prehosp Disaster Med 2009, 24(6):556-564.
22. Eldar R. Preparedness for medical rehabilitation of casualties in disaster situations. Disability & Rehabilitation 1997; 19(12):547-51.
23. Bayntun C. A health system approach to all-hazards disaster management: A systematic review. PLoS Curr. 2012 Aug 22; 4:e50081cad5861d.
24. Phillips BD. Disaster Recovery. Boca Raton (FL): Taylor & Francis Group; 2009
25. Coppola DP editor. Introduction to international disaster management. Oxford: Elsevier Inc; 2007.
26. Raissi GR. Earthquakes and Rehabilitation Needs: Experiences From Bam, Iran. J Spinal Cord Med 2007; 30:369–372.
27. Reinhardt JD, Li J, Gosney J, Rathore FA, Haig AJ, Marx M et al. Disability and health-related rehabilitation in international disaster relief.Glob Health Action.2011; 4: 7191.
28. Rathore FA, Farooq F, Muzammil S, New PW, Ahmad N, Haig AJ. Spinal cord injury management and rehabilitation: highlights and shortcomings from the 2005 earthquake in Pakistan. Arch Phys Med Rehabil 2008; 89:579-85.
29. Rathore FA, Gosney JE, Reinhardt JD, Haig AJ, Li J, DeLisa JA. Medical rehabilitation after natural disasters: why, when, and how? Arch Phys Med Rehabil 2012 Oct; 93(10):1875-81.
30. Tauqir SF, Mirza S, Gul S, Ghaffar H, Zafar A. Complications in patients with spinal cord injuries sustained in an earthquake in Northern Pakistan. J Spinal Cord Med 2007; 30: 373-7.
31. Liu SG, Li JA, Wang HX, Wang BB, Xiao MY, Zhang X et al. [Community based rehabilitation needs for the earthquake victims in Sichuan-Mianzhu.] Chin J Phys Med Rehabil 2011; 33: 59–61. [In Chineese]
32. Raissi GR, Mokhtari A, Mansouri K. Reports from spinal cord injury patients: eight months after the 2003 earthquake in Bam, Iran. Am J Phys Med Rehabil 2007; 86: 912-7.
33. Haig AJ, Im J, Adewole A , Nelson VS, Krabak B. The practice of physical medicine and rehabilitation in subSaharan Africa and Antarctica: a white paper or a black mark? Eur J Phys Rehabil Med 2009 Jun; 45(2):185-91.
34. Vale LJ, Campanella TJ. The resilient city: how modern cities recover from disaster. New York: Oxford University Press; 2005.
35. Campanella TJ. Longer view: urban resilience and the recovery of New Orleans. J Am Plann Assoc 2006; 72(2):141–6.

36. Khankeh HR, et al. [Hospital preparedness in disasters]. Tehran: University of Social Welfare & Rehabilitation Sciences Press; 2012. [Book in Persian]
37. Risk reduction and emergency preparedness: WHO six-year strategy for the health sector and capacity development [Online]. 2009; Avilable from: URL: http://www.who.int/hac/techguidance/preparedness/emergency-preparedness-eng.pdf.
38. Mehrabadi Z. [Evaluation of safety in selected hospitals of Tehran university of Medical Sciences in Disasters].Homay-Salamat 2006; 5(16): 11. [Article in Persian]
39. Nasrabadi AN, Naji H, Mirzabeigi G, Dadbakhs M.Earthquake relief: Iranian nurses' responses in Bam, 2003, and lessons learned. Int Nurs Rev 2007 Mar; 54(1):13-8.
40. Qureshi KA, Gershon RR, Merrill JA, Calero-Breckheimer A, Murrman M, Gebbie KM, et al. Effectiveness of an emergency preparedness training program for public health nurses in New York City. Fam Community Health 2004 Jul-Sep; 27(3):242-9.
41. Gebbie KM, Qureshi K. Emergency and disaster preparedness. Am J Nurs 2002; 102(1):46—51.
42. Pinkowski J, editor. Disaster Management Handbook. Boca Raton (FL): Taylor & Francis Group LLC; 2008.
43. Mori K, Ugai K, Nonami Y, Kirimura T, Kondo C, Nakamura T et al. Health needs of patients with chronic diseases who lived through the great Hanshin earthquake. Disaster Manag Response 2007 Jan.Mar; 5(1):8-13.
44. Hoffman, Sharona, Preparing for Disaster: Protecting the Most Vulnerable in Emergencies. UC Davis Law Review 2009; 42: 1491-1547.
45. Chou YJ, Huang N, Lee CH, Tsai SL, Chen LS, Chang HJ.Who is at risk of death in an earthquake? Am J Epidemiol 2004; 160:688-95.
46. Tharp AT, Constans JI, Yin R, Sullivan G, Vasterling JJ, Rouse J et al.Service provision in disaster preparation, response, and recovery for individuals with predisaster mental illness.Am J disaster Med 2012 Summer;7(3):171-4.
47. Zoraster RM.Barriers to disaster coordination: health sector coordination in Banda Aceh following the South Asia Tsunami. Prehosp Disaster Med 2006 Jan-Feb; 21(1):s13-8.
48. Lee VJ, Low E.Coordination and resource maximization during disaster relief efforts. Prehosp Disaster Med 2006 Jan-Feb; 21(1):s8-12.
49. Parmar S, Lobb A, Purdin S, McDonnell S.Enhancing collaboration during humanitarian response: an interim report from stakeholders survey. Prehosp Disaster Med 2007 Sep-Oct; 22(5):414-7.
50. Oyegbite K. What have we learned? Coordination. Prehosp Disaster Med. 2005 Nov-Dec; 20(6):471-4.
51. Laszlo A, Krippner S. Systems Theories: Their Origins, Foundations, and Development.In: Jordan JS editor. Systems Theories and A Priori Aspects of Perception. Amsterdam: Elsevier Science; 1998. pp. 47-74.
52. Norris, FH, Alegría, M. Promoting Disaster Recovery in Ethnic-Minority Individuals and Communities. In: Ritchie EC, Watson PJ, Friedma MJ editors. Interventions following mass violence and disasters: Strategies for mental health practice. New York: Guilford Press; 2006. p. 319-342.
53. Hofstede G, Hofstede GJ. Cultures and Organizations: Software of the Mind. New York: McGraw- Hill; 2005. p. 73-114.
54. Draguns J. Ethnocultural considerations in the treatment of PTSD: Therapy and service delivery. In Marsella A, Friedman M, Gerrity E, Scurfield R. editors. Ethnocultural aspects of PTSD: Issues, research, and clinical applications Washington DC: American Psychiatric Association Press; 1996. pp. 459–482.