oi 10.30491/TM.2020.255724.1196

Trauma Monthly

Original Article

Cluster Approach Model for Promoting Coordination in Humanitarian Aid; Following the Kermanshah Earthquake, Iran, 2017

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Received October 03, 2020; Accepted November 22, 2020; Online Published December 01, 2020

Abstract

Background: The Cluster model designed to promote humanitarian response management is used as an effective model for cooperation and participation of the relevant aid organizations.

Objective: We sought to identify the type and method of humanitarian aid to support people affected by the Kermanshah earthquake and to discuss the importance of the cluster approach in humanitarian response.

Methods: In this descriptive cross-sectional study, data were collected in two phases. First, news and national reports were reviewed and then scientific articles were studied for implementation of the cluster approach for humanitarian aids in disaster. Finally, the findings were compared using the cluster approach of humanitarian aid, analyzed gap and duplication issues in the aid related to the Kermanshah earthquake.

Results: Finding showed 308 pieces of news and reports on humanitarian aid transmission were found, 38 % (33) of which were from government agencies and 62% from non- governmental institutes. Review of the NEWS agencies revealed that 150 non-governmental organizations (NGO) and 33 government agencies had helped Kermanshah by sending financial and non-financial aids. The cluster approach was necessary for improving humanitarian responses in developing countries, especially countries located in disaster-prone zones. The cluster model can be used in social donation and can be managed by volunteer organizations during disasters for collecting and transferring the donations.

Conclusion: The Cluster model is designed as a solution to promote humanitarian response management. This approach is used as an effective model for cooperation and participation of the relevant aid organizations. There are currently 11 clusters including agriculture, camp management, rapid recovery, education, shelter, telecommunications, health, support, water and sanitation, nutrition, protection and health.

Keywords: Kermanshah earthquake, Humanitarian aid, Volunteers, NGO and governmental organization, Donation and cluster approach.

Introduction

Based on the statistics, over the past 55 years there is a rising trend in the occurrence of natural disasters to an estimated amount of 5 times.¹ Over the 21st century, Iran comes third among the eastern Mediterranean countries in natural disasters (1900-2015).² Apart from human loss and casualties, natural disasters damage the infrastructure and resources.³ Given the magnitude of the disasters, lack of resources and power on the part of governments, humanitarian aid plays a key role in the recovery and maintenance of the survivors' lives. Based on the annual report of the United Nations Office For the Coordination of Humanitarian Affairs (UNOCHA) in 2018, more than 133

million people from 44 countries were in need of humanitarian aid, with an estimated worth of 25 billion dollars.⁴

Iran has endured a lot of natural disasters every year. One of the severe disasters was a massive earthquake with a magnitude of 7.3 on the Richter scale that occurred in Kermanshah province on November 12, 2017 at 21:48, leaving 620 dead and over 10000 injured.^{5, 6} Earlier in the 21st century, in December 2003, Bam city in southeastern Iran experienced a deadly earthquake with a magnitude of 6.6 on the Richter's magnitude scale, leaving 30000 dead, 20000 injured and 60000 homeless.⁷ In this earthquake, 80 percent of the buildings were destructed, and a total of 4951 buildings

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were completely demolished.8,9

Post disaster assessments revealed that lack of disaster management plan and ineffective communication between the organizations involved in the field, inappropriate management of national and international humanitarian aid led to a weak response in the aftermath of Bam earthquake.⁹

Studies showed that the lessons learned from the Bam earthquake were not applied in Kermanshah and a lot of weak points were reported in the collaboration between governmental and non-governmental aid organizations.⁶

In recent years, the interaction between organizations has become very important and challenging by the increase in natural disaster occurrence.¹⁰ When there are various organizations in the field with different approaches, they encounter a lot of problems in keeping the coordination.⁶

Response management is a complicated and difficult phase. Due to the variety of organizations' functions, coordination between the involved organizations is very important.¹¹ Such an efficient coordination prevents financial loss, and refines the offered services.¹² This issue is challenged by various factors such as the presence of the volunteers in the scene and the aid provided by the NGOs and the people.¹³ Participation in the evacuation of affected people from hot zone to safe shelter, the supply of food, and survival material distribution is provided by the humanitarian and volunteer organizations through developing an operational plan and controlling process. These measures are implemented by public and private sectors, NGOs, the UN agencies, Red Cross and other aid organizations.¹⁴

The experiences and lessons learned from natural disasters in various countries indicate that the shortage of required resources and the profusion of some unnecessary goods lead to loss of resources and dissatisfaction of the people affected. Coordination plays a critical role in the effectiveness of the humanitarian response. The cluster approach is designed for achieving this goal and used to tackle this problem.¹⁵

In other words, a cluster is a group of agencies that work together to achieve common goals in a specific section for emergency response. The cluster approach, launched in 2006 as a part of the Reform Process of UN humanitarian action, is an important step towards more effective humanitarian coordination. The cluster approach aims to improve the timely and effective prediction of humanitarian response, and facilitates the process of recovery. Furthermore, this approach strengthens coordination and cooperation among the United Nations, the Red Cross and non-governmental organizations (NGOs).¹⁶

Current models of humanitarian programs are not suitable for situations that require rapid action by donors and relief agencies. So that these models lead to delay in delivery of the aids.¹⁷

There are currently 11 clusters including agriculture, camp management, rapid recovery, education, shelter, telecommunications, health, support, water and sanitation, nutrition, protection and health, as well as 4 sections including age, environment, gender and AIDS. Each cluster is managed by the United Nations or jointly with NGOs and local government. The findings of a study on the strengths and weaknesses of the cluster approach to humanitarian action showed that the cluster approach has many advantages and opportunitis to scale sexual health services. However, to promote the implementation of this approach, it is essentials to strengthen leadership, monitoring and commitment.

The cluster approach as humanitarian aid can be classified into predetermined groups by governmental and nongovernmental organizations, which predict, provide and meet their basic needs such as shelter, food and health clusters.¹⁸

In the aftermath of the Bam earthquake, call for the international humanitarian aid and the simultaneous presence of over 200 international organizations and NGOs had made a major challenge for the inter-organizational coordination on the first week.8 Cluster model was created as a solution for improving response management and it can be noticed as an effort to achievement of coordination in synchronized function.^{19, 20} A cluster approach is a management tool for promoting coordination in sending humanitarian aid during natural disasters and incidents. This approach is designed as a model for effective cooperation and participation among involved aid humanitarian organizations through categorizing the essential needs of the affected people in homogeneous groups.²¹ The timeliness and process of providing and distributing humanitarian aid, in compliance with real needs are main factors affecting the satisfaction rate of people affected.22

Awareness of experiences and lessons learned related to challenges can help optimize planning and efficiency and effectiveness. Lack of proper resource management is one of the major challenges in disasters like earthquakes and floods.^{23, 24}

Custer approach was first applied in the Pakistan flood in 2010 as a large scale natural disaster that collected more than 3 billion dollars donated by various governmental non-governmental international organizations until July 11, 2011. The results of this study revealed that the affected people were satisfied with the response phase.²⁵ Similarly, the cluster model was applied in the aftermath of the Nepal earthquake in 2015, leading to the peoples' satisfaction.²⁶

Poor management among different sections and inefficiency are the main challenges in this area. Improving these processes requires improving infrastructure, planning, staff training and public education.²⁷

This study was designed to identify the type and method of humanitarian aid to support people affected by the Kermanshah earthquake and discuss the importance of the cluster approach in humanitarian response.

Materials and Methods

This descriptive cross-sectional study was conducted from December 2017 to February 2018. The data were collected through two steps: First, NEWS and national reports were reviewed and aimed at finding information about the range and kinds of Iranian humanitarian aids to Kermanshah earthquake, and in the second step, scientific articles were reviewed for the possible application of cluster approach for humanitarian aids in disasters. The related papers were searched through Google Scholar, Scopus, PubMed, Web of Science (WOS) and Scopus databases.

Finally, the findings were compared with the cluster approach of humanitarian aid. Moreover, the gap and duplication issues regarding the humanitarian aids in the Kermanshah earthquake were investigated.

Databases and Search Strategy

The search for reliable NEWS was carried out in the national Persian newspaper website, Iranian NGO institute website, governmental organization, non-governmental website with a valid Iranian search engine and Google scholar. Likewise, all of the performance reports of various Iranian organizations with humanitarian response missions that donated humanitarian aid to Kermanshah, including volunteer, NGO, charity institute, government, private and other organizations, were studied. The search for NEWS and national reports was performed using a combination of three groups of words and all of them were combined with "AND" together.

The keywords of 'Kermanshah earthquake', 'humanitarian aid', 'volunteers', 'NGO and governmental organization' and 'cluster approach' were searched for investigating the titles, abstracts and keywords in bases of Medline Pub Med, Scopus, ISI, ProQuest, Google Scholar and Science Direct:

"-1 #Kermanshah earthquake" OR "Sarpol-e Zahab earthquake" OR "Iran–Iraq earthquake" OR "Ezgeleh earthquake" "

"-2 #humanitarian aid" OR "" humanitarian Assistance"

"-3 #Cluster approach"

#-4 # 1AND #2 AND #3

Results

Kermanshah earthquake happened on a Sunday evening, November 12, 2017, at 18:18 UTC with a moment magnitude of 7.3 on the Richter's magnitude scale in the depth of 11 Kilometers occurred on the Iran–Iraq border, with the Iraqi Kurdish city of Halabja, and Iranian Kurdish dominated places of Ezgeleh region. The earthquake was followed by more than 1000 aftershocks over the next few days, the biggest of which was 4.7 on Richter's magnitude scale. A total of 78 cities and 1930 villages were destroyed in Iran,²³ and the Iranian affected population amounted to 427226 people.²⁸







Figure-1. Geographical status of Kermanshah Province

Being located in high-risk areas doubles the risk of financial and human loss. The study of the risk maps of Iran shows that Kermanshah is located on the moderate-damage zone (Figure-1) in which there is a potential for earthquakes larger than 6 on Richter's magnitude scale.^{29, 30} Totally, 308 pieces of NEWS and reports on humanitarian aid transmission were found through searching NEWS and reports with the content of humanitarian aids during 2 months after the earthquake. Among them, 38% were from government agencies and 62% from non- governmental institutes. Moreover, 60% of the gathered NEWS reports were extracted from national newspaper agencies, 23% of private, charity and NGO institutes' websites, 9% from daily Newspapers, and 8% from the legal ownership social media websites (Figure-2).



Figure-2. Frequency of published NEWS about the humanitarian assistance to Kermanshah earthquake

By reviewing the NEWS agencies, it was found that 150 NGO agencies (non-governmental) and 33 government agencies had helped Kermanshah by sending financial and non-financial aids. Also, the humanitarian aid items for Kermanshah earthquake consisted of 57 types, 51% of which were non-cash assistances, 25% financial assistances, 19%

supportive aids and participation in the reconstruction and restoration of buildings, and 5% were human resources (except for government agencies). It was found that the total amount of financial aid was estimated to be 16810 billion Iranian Rials (16,810,578,500,000, well over 420 Million USD, the exchange rate of November 2017).



Humanitarian assistance to kermanshah earthquake by type - 2017/12/01 to 2018/01/31

Because of the seasonal cold weather at the month of the earthquake occurrence, mountainous region, cold wave and

precipitation system entrance, shelter, caravan or Conex house were major peoples' need that reflected in media

Figure-3. Humanitarian assistance by type

Farahi-Ashtiani et al

reports. Data analysis revealed that the Conex box house was the most frequent donated item. Based on NEWS 10055, Conex house boxes were prepared and sent to the region by government, non-government and NGO agencies. 29 Moreover, other items included 803000 blankets, 102227 tents and more than 1000 tons of linoleum for covering the tents to prevent water penetration. Numerous items that are required for other basic life in the earthquake struck regions included drinking water, dry and wet food packages related to nutrition cluster, and also actions for constructing accommodation camps such as latrines, industrial Conex boxes for preparing bread in shelter cluster, as well as more than 10 medicinal cargos, dispatching thousands of healthcare specialists, establishment of a field hospital, and temporary emergency basis in the healthcare cluster. All government-affiliated aid agencies, and private, nonprofit, and public sectors sent their donated items according to their capabilities. To assess their compliance with the immediate and long-term needs of the affected people, there is a need for scientific and methodological evaluation of the affected region. It is necessary to match the donated aids with the real needs, because 100 air conditioners were donated in winter. In the shelter cluster, participating in the construction and restoration of health centers, schools, establishing child care centers, establishing small workshops, and creating employment by 15 agencies were also mentioned.

Considering the diversity of donated items and difficulty in adding up their quantity, the donated items as humanitarian aids to Kermanshah earthquake were organized in a cluster model based on the defining function in the cluster approach, which can be seen in Figure-4. As can be seen in this figure, public and institutional humanitarian assistance must be organized. In the Kermanshah earthquake, there was a large amount of aid in some clusters and some clusters had much more assistants than others.



Figure-4. Matching humanitarian assistance by cluster groups

Discussion

This study investigated the amount and types of humanitarian aid from the government, private, charity and other organizations in the Kermanshah earthquake by analyzing the official NEWS and reports. The results revealed various processes of supply, transfer and distribution of aid and mismatch with the survivors' people needs laeding to dissatisfaction among them. Even though the goal of all donations was meeting the demands of the people, but lack of coordination and mismatching in this process, highlighted the necessity of effective management in the humanitarian aid response.

Humanitarian actions are conducted to save lives and alleviate suffering from disasters, and all of the humanitarian operations could be divided into two major categories of immediate and long term needs. It is imperative to provide them based on the affected peoples' needs.³¹

The most important challenges of government and humanitarian agencies are responding to the urgent needs and coordination of the organizations involved.³² Organizing the resources, coordinating and matching the aids with the estimated needs and available capacities, facilitating the process of transfer and distribution are the main tasks of the governments in the aftermath of disasters.²⁰

In Kermanshah earthquake, various factors such as the magnitude of the earthquake, frequent aftershocks, seasonal cold weather, and precipitation had created a difficult situation for the people affected. Massive Iranian media coverage of the severity of the damage, the people's suffering, and their needs of affected people created a wave of sadness and widespread public sympathy among Iranians.

Governmental, private, non-profit organizations, NGOs, charity centers, mosques' boards of trustees, celebrities and popular figures all started to collect and then transfer donated items to the earthquake-prone region. In this situation, spontaneous decision making, spontaneous collecting aids, and dissatisfaction of people in Kermanshah showed the main challenges in communication management, need assessment process, coordination in supply chains and transferring donated aids.

In Bam earthquake requesting international assistance without estimation and uneven distribution had created a similar challenge.¹³

Based on the result, most of the humanitarian donations were in cash, amounting to a total of 16810 billion Iranian

Rials (16,810,578,500,000, well over 420 Million USD, the exchange rate of November 2017), followed by shelter cluster and food security shelter.

Donating money is one of the most common types of humanitarian assistance in disasters. The difficulty of transferring non-cash donations makes cash donation the most effective method in national and international assistance. Cash donations can be saved and spent based on the needs and priorities, matching by the status of non-cash items in the affected region. Donating cash is a type of humanitarian aid which become popular since 1990s.^{33,34} The Indian Ocean Tsunami in 2004 was a turning point in humanitarian organizations' tending to send the aid in cash. Money, financial commitments to participate in reconstruction, and participation by providing the cost of education are kinds of financial donations in crisis and disasters.³⁴

Coordination as one of the most important management components plays an essential role in humanitarian assistance. In order to meet the estimated needs in a useful time and effective process, it is necessary to provide, transport, and distribute humanitarian assistance in accordance with a timetable plan. Based on a report, 4480 humanitarian organizations are active across the world that deliver various materials and services in disasters and emergencies, therefore coordination between the humanitarian organizations is necessary for avoiding duplication or missing efforts.¹⁵

In the aftermath of Kermanshah earthquake, excessive supply of some goods such as bottled water led to wasting and misspend the donated goods, while people complained about lack of temporary housing and infrastructure. After the Nepal earthquake, the main coordination cluster was created by the government for coordinating among 11 clusters of humanitarian aid although, some weak points and gaps were identified in planning and coordination.²⁶

Lack of coordination in reception and distribution of humanitarian aid was one of the major challenges in the Kermanshah earthquake management, which is clear in the findings of this study.

The data were arranged into 11 clusters' groups and are shown (Figure-3).

The cluster approach was offered for all countries as a solution for decreasing challenges and problems related to coordination in humanitarian actions. Therefore, this model was presented as a new part of the Humanitarian Reform Program to enhance predictability, response, and participation. The cluster approach was formed by organizing 11 clusters related to the main survival and life maintenance. The aim of this approach was to promote the readiness, coordination and increase technical capacity in humanitarian response, creating specified leadership and improving responsibility.^{35, 36}

The collected data in this study does not indicate all the humanitarian aids and only shows the information published in media and at the time of the search. Hence, this data would certainly be different from the real donation to the Kermanshah Earthquake. On the other hand, observation and reports of social networks due to lack of valid information were another limitation of the study.

Conclusions

Responding to the needs of the affected people in natural disasters, emergencies, and social crises, timeliness and conformity between donated items and real needs are among the major missions of humanitarian organizations.

Implementation of cluster approach leads to the quality improvement of coordination in humanitarian assistance. This model can match with hazard risk map and predicted needs, and performing an exercise for improving preparedness is necessary prior to disaster occurred.

In developing countries, especially disaster-prone countries, the cluster approach can be used as a model for improving the goal of improving humanitarian responses. Based on the lessons learned from previous disasters in Iran, the cluster approach can prevent scattered efforts, ineffective decisions making by the related organizations.

In this model, to strengthen disaster preparedness, intercluster coordination, and quickly and effectively regional relief, it is highly recommended that clusters of landscaping areas be designed based on the land-use plan.

Acknowledgments

The research team would like to thank the organizations and colleagues who helped us collect the information needed for the study

Authors' Contribution

All authors pass the four criteria for authorship contribution based on the International Committee of

Medical Journal Editors (ICMJE) recommendations.

Conflict of Interests

The authors declared no potential conflict of interests with respect to the research, authorship, and/or publication of this article.

Funding/Support

The authors received no financial funding or support for the research.

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