

Presenting a Framework for Provincial Crisis Response Programs in Hamadan Province

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Abstract

INTRODUCTION: After the approval of the country's crisis management law, the upstream documents related to this law, including the preparedness and response programs at the national and provincial levels, are among the tasks assigned to increase the efficiency of the crisis management processes.

METHODS: This study presents a general framework for developing a provincial crisis response program. The proposed process has been used to develop the crisis response program of Hamadan province. In the phase of understanding the current situation, questionnaires and in-depth interviews were used to collect field data and determine the challenges presented to crisis management in Hamadan province. Moreover, a method for allocating the specialized functions of the response phase to the provincial organizations has been presented using the national crisis documents.

FINDINGS: In general, the findings of this research can be assigned to three groups. The first group pertained to the project method, including the stages of understanding the current situation and developing the response program of the provinces. The second group of findings was the summary of the analysis of field data collected regarding the state of preparedness and response in Hamadan province. The third group encompassed determining and allocating specialized crisis response functions in Hamadan province. The functions of the provinces (n=32) and after their compliance with the national functions, the crisis management law, and the capabilities of the existing organization in the province, 56 specialized sub-functions were identified in the provinces, and the responsible, collaborating, and supporting institutions were determined.

CONCLUSION: As evidenced by the obtained results, in the process of function allocation, some problems have been identified due to the shortage of information in the upstream documents, which are suggested to the crisis management organization for better planning.

Keywords: Crisis management; Hamadan province; Planning; Preparedness and response program; Rescue & relief

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Introduction

Natural disasters are a harsh reality of today's world, inflicting dramatic social and economic damage every year despite considerable advances in science and technology. In 2020, 389 crises affected more than 98.4 million people worldwide and caused \$ 171.3 billion in damages. In the same year, approximately 15,080 people lost their lives due to these crises. This statistic has grown significantly

compared to previous years and 2019 (1). One of the challenges that has been repeatedly presented to the management of emergency situations and response to crises in Iran is the absence of extra-organizational coordination due to the lack of an operational plan to prepare and respond to risks at the national, provincial, and city levels.

Therefore, time would be wasted in the crisis response phase, and effective measures cannot be

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implemented to save the lives of injured people. It can be stated that the legal loopholes and the lack of upstream documents, as well as specific programs developed at the national and provincial levels by policymakers and those in charge of the crisis, play a major role in the limited effectiveness and efficiency of crisis management. After the approval of the country's crisis management law, one of the issues raised in the country's crisis management is the compilation of national and provincial documents required by this law.

One of the documents specified in the country's crisis management law is the provincial disaster preparedness and response plan document. The provincial response plan is a document prepared by the General Administration of Crisis Management of the province in accordance with the laws and regulations and with the participation of all responsible institutions, the subject of Article 2 of this corresponding law in the province, based on the major goals specified in the national crisis management strategy document and based on the national plan. It explains the duties of responsible institutions and the inter-organizational coordination method for optimal preparation, as well as an effective and timely response to incidents and crises.

The present study aimed to provide a model for developing provincial response programs using upstream documents, as well as the existing abilities and potentials of each province. The step-by-step framework designed according to the data of Hamadan province has been used to prepare the response plan in this province. In the first step, this study strives to address the issue of how to prepare the crisis response program in each province by using scientific methods and upstream documents of crisis management. In addition, in the second step, the purpose of this research is to define and allocate the provincial specialized functions of crisis response to its related organizations.

Developing a program in the field of crisis management

Table 1. Descriptive statistics of risk leveling based on experts' opinions in Hamadan province

Level	Risk
Little importance	Transportation hazards (air and rail), avalanche, building collapse, industrial hazards, desertification, erosion, fire, lightning
Relatively high importance	Snow blizzards, agricultural pests and diseases, human and common poisoning and epidemics, transportation hazards (road), environmental pollution (emission of toxic and dangerous substances), hail, subsidence and sinkhole, slope instability,
high importance	Heavy snow, haze, storm, strong wind, and frost Earthquake, flood, drought

After the approval of the crisis management law in 2018, the upstream documents of crisis management at the national level were prepared, approved, and communicated by the Natural Disasters Research Institute under the supervision of the country's crisis management organization as follows in 1400.

- National Crisis Management Strategy Document
- National program to reduce the risk of disasters and incidents (paragraph b, article 4 of the country's crisis management law).
- National Preparedness and Response Program (paragraph 3, Article 4 of the Country's Crisis Management Law)
- National Reconstruction and Rehabilitation Program (paragraph 4, article 4 of the country's crisis management law)

At the provincial level, we can refer to a study regarding the risk assessment of common hazards in Hamadan province with the aim of developing a provincial plan to reduce the risk of accidents and disasters. According to the final report of this project, the results of the descriptive statistics of risk leveling in Hamadan province demonstrate low, relatively high, and high crises, as described in Table 1 (2). There are not sufficient research records in the country regarding the development of crisis management programs. In this regard, we can only refer to the study by Kordshouli et al., who presented the strategic plan framework at the national and regional levels based on the study of the strategic documents of three countries: The United States, Japan, and Turkey (3).

Research related to crisis management in Hamadan province

This section examined the research in the field of crisis management with an emphasis on measures related to the phases of preparedness and response in Hamadan province. The summary of contents is categorized according to Table 2. Mirzaei Samei et al. (4) have investigated the crisis caused by the effects of the

Table 2. Scientific articles on crisis management in Hamadan province

Row	Authors (year)	The title of the scientific-research article	Hazard	Area	Phase
1	Samei et al. (4)	Earthquake crisis management using the experiences of the Sarpol Zahab earthquake (Hamadan city pilot)	Earthquake	Hamadan city	Preparedness
2	Abbaszadeh Shahri et al. (5)	Effect of the earthquake on the main pipelines of Hamedan Province with a special look at the gas transmission pipelines	Earthquake	Hamadan province	Preparedness
3	Nyusha et al. (6)	Investigating the seismic vulnerability of buildings in Hamadan city	Earthquake	Hamadan city	Preparedness
4	Varesi and Maham (8)	Investigating the resistance of urban residential buildings against earthquakes (case study: Hamadan)	Earthquake	Hamadan city	Preparedness
5	Sepehri et al. (7)	Flood risk assessment in the historic city of Hamadan	Flood	Hamadan city	Preparedness
6	Fathollahzadeh and Roshan Neko (9)	Flood hazard zoning of Hamedan city using fuzzy hierarchical analysis	Flood	Hamadan city	Preparedness
7	Karami Noor (10)	Preparation of flood hazard map of Hamedan Qarachai basin using geographic information system (GIS)	Flood	Hamadan province	Preparedness
8	Movagharpak (11)	Formulation of an effective strategy in the management of the Covid-19 crisis with an emphasis on the role of Naja using the SWOT matrix method	Epidemic disease	Hamadan city	Response
9	Habib et al. (12)	Social capital and its impact on crisis management in cities	Multi-hazard	Hamadan city	Preparedness and response
10	Qorbani (13)	Analysis of the water crisis in Hamadan-Bahar plain	Drought	Hamadan city	Preparedness
11	Yazdani et al. (14)	Meteorological drought zoning using GIS in Hamadan province	Drought	Hamadan city	Preparedness

earthquake on the urban water supply network. In this article, positive results were achieved using the statistical method, as well as the experiences and opinions of the managers, experts, and technicians of Hamadan Water and Sewerage Company, who were present in the Sarpol e Zahab earthquake and were responsible for providing water supply services and repairing the water distribution network in the designated areas of Sarpol e-Zahab city. It will be possible to use these results to prevent and reduce the effects of crises in other regions of the country.

Abbaszadeh Shahri (5) has investigated the impact of earthquakes on gas transmission pipelines and points out that the mechanical behavior of gas transmission pipelines in previous earthquakes shows their vulnerability to earthquakes. Based on this, strengthening these pipelines to avoid post-quake devastation is of utmost importance, especially in seismic areas. Nyusha et al. (6) investigated the vulnerability of buildings in the 1st district of Hamadan and also

the resistance level of urban residential buildings against earthquakes. They came to the conclusion that in District 1 of Hamadan, 33%, 21%, and 22% of buildings have a very high, high, and moderate risk of vulnerability, respectively, against earthquakes. Structural damages are serious in moderate and severe earthquakes. In their research, Sepehri et al. (7) referred to flood as a natural disaster that does not occur by itself; rather, it is caused by land use, inflicting huge human and financial losses every year.

Research related to the common challenges presented to preparedness and response in crisis management

While examining the necessity of preparedness and strategies of organizations in the face of crises, the study by McCall proposed and investigated influential factors in disaster management planning, such as command and control center, emergency, record keeping during the disaster and immediately after that,

coordination with external responders, communication systems, warnings, life safety, evacuation, and education (15). In another research conducted by Daroudi and Sepehri, crisis management in Iran has been evaluated based on Little John six-step model. In this research, based on the Little John model, a questionnaire was distributed on the strengths and weaknesses of crisis management based on the case study of the flood in April 2019 in Lorestan and Mazandaran and Kermanshah earthquake in November 2017,

and the opinions of experts from relevant organizations were collected and analyzed (16). In the research conducted by Petroudi et al. regarding the challenges of crisis management networks, the challenges in this field have been identified, prioritized, and structured. A case study has been performed on crisis management in Tehran. This research has identified 18 main challenges that the governance of the crisis management network is facing. Some of them are listed in Table 3 (17).

Table 3. Obstacles and challenges of crisis management network governance

The main challenge group	Obstacles and challenges
Knowledge management and documentation	Lack of accurate and comprehensive recording of lessons learned and learning from previous experiences/ senior managers' lack of mastery over the principles and knowledge of management
Education and culture building	Some workers' incorrect understanding of the nature of the crisis/lack of a scientific approach to crisis management issues/lack of awareness and knowledge about the activities of other organizations
Structures and organization	Absence of integrated management and unity of command / Existence of parallel institutions in Tehran Crisis Management Command / Lack of stability in management positions in relevant organizations / Lack of proper use and benefit of volunteers / Lack of additional capacity in service centers
Management systems and processes	Lack of appropriate reward and punishment system for crisis management forces/lack of standards and criteria for performance measurement/improper recruitment process in organizations in charge of crisis management/lack of accurate and scientific assessment of post-disaster damages /weak monitoring of actions and operations before and during and after the crisis/inefficiency in the formulation and generality of national and regional strategies
Laws and regulations	Failure to update some old documents and laws

One of the important and basic functions to improve preparedness and capacity building is holding various exercises to deal with different crises. In their research, Dehkordi and Gholami identified the problems of this field and prioritized them using decision-making techniques. The identified challenges included the unfamiliarity of some people with the equipment and facilities, irregularity in conducting operations, the lack of an accurate scenario and a precise definition of the roles, duties and responsibilities of people, the loss of the equipment and facilities used in the operation, the lack of evaluation right after the disaster, lack of coordination between the organizations performing the maneuver, lack of sufficient facilities during the operational exercise, and lack of coordination among the members of an organization.

Finally, the most important and major problem in holding operational exercises and maneuvers was determined as management problems and lack of scenario preparation (18). One of the

important and influential factors in the effectiveness of the crisis management process is the role of managers in this area. Their level of commitment, ability, competencies, level of awareness, and management styles are among the most effective factors in this regard. In this regard, Kavousi et al. conducted a study entitled "Explaining the Influence of Managers' Individuality on Their Management Styles in the Crisis Management Process through Presenting an Applied Model (case study: Managers And Experts Of Khuzestan Crisis Management Headquarters)." (19).

Ahmadi et al. conducted a study on the role and importance of human resources in different stages of the crisis and influential cultural factors (20). The lack of cooperation and coordination among different actors in the crisis supply chain can lead to a decrease in the efficiency of crisis response operations. The reason for this non-cooperation can be the high diversity of these organizations, as well as their different interests,

expectations, capacities, and missions. In this regard, Balcik et al. performed a study to further investigate these challenges and provide solutions to solve them in relief supply chains (21). In their study, Kovács and Spence identified humanitarian logistics challenges based on data from Ghana.

In this research, according to the different types of disasters, disaster relief steps, and the type of humanitarian organization, the challenges of crisis management included such issues as non-cooperation of organizations with each other, insufficient knowledge of other organizations, non-compliance with standards and procedures, as well as the lack of transportation infrastructure and required equipment (22). Cabra and Ramesh also classified the obstacles presented to the coordination in the management of humanitarian supply chains, which included 23 items, into five groups: strategy, technology, cultural, individual, and organizational. Senior management's non-commitment and uncoordinated policies were identified as the most important factors. In this research, finally, 15 solutions to overcome obstacles were proposed and prioritized (23).

Methods

As displayed in Figure 1, the structure of the crisis management model based on the NFPA standard includes the stages of planning, implementation, training, exercise, and maneuvers. The proposed general structure for the preparation of provincial preparedness and

response programs based on the NFPA standard cycle and the description of the proposed services of the provincial preparedness and response programs contained in the National Preparedness and Response Plan Document is presented in Figure 2. The main focus of this research only includes the stages of developing the crisis response program at the provincial level. The training and preparation of the exercise and maneuver program of the government agencies in the province are out of the scope of this research.

The research method used in the phase of understanding the current situation was to collect and analyze field data of crisis management organizations in the province. In this way, some information related to the performance of organizations in response to past crises and measures related to their preparedness for future crises has been collected, categorized, and analyzed by administering specific questionnaires. In the rest of the recognition phase, the challenges of Hamadan crisis management have been determined and categorized by using the qualitative research method and conducting in-depth interviews. The statistical population of this research included the representative of all the institutions specified in the upstream documents as responsible, collaborating, and supporting organizations regarding the process of preparedness and response to the crisis in Hamadan province (55 organizations).



Figure 1. Crisis management model based on NFPA 1600 Standard

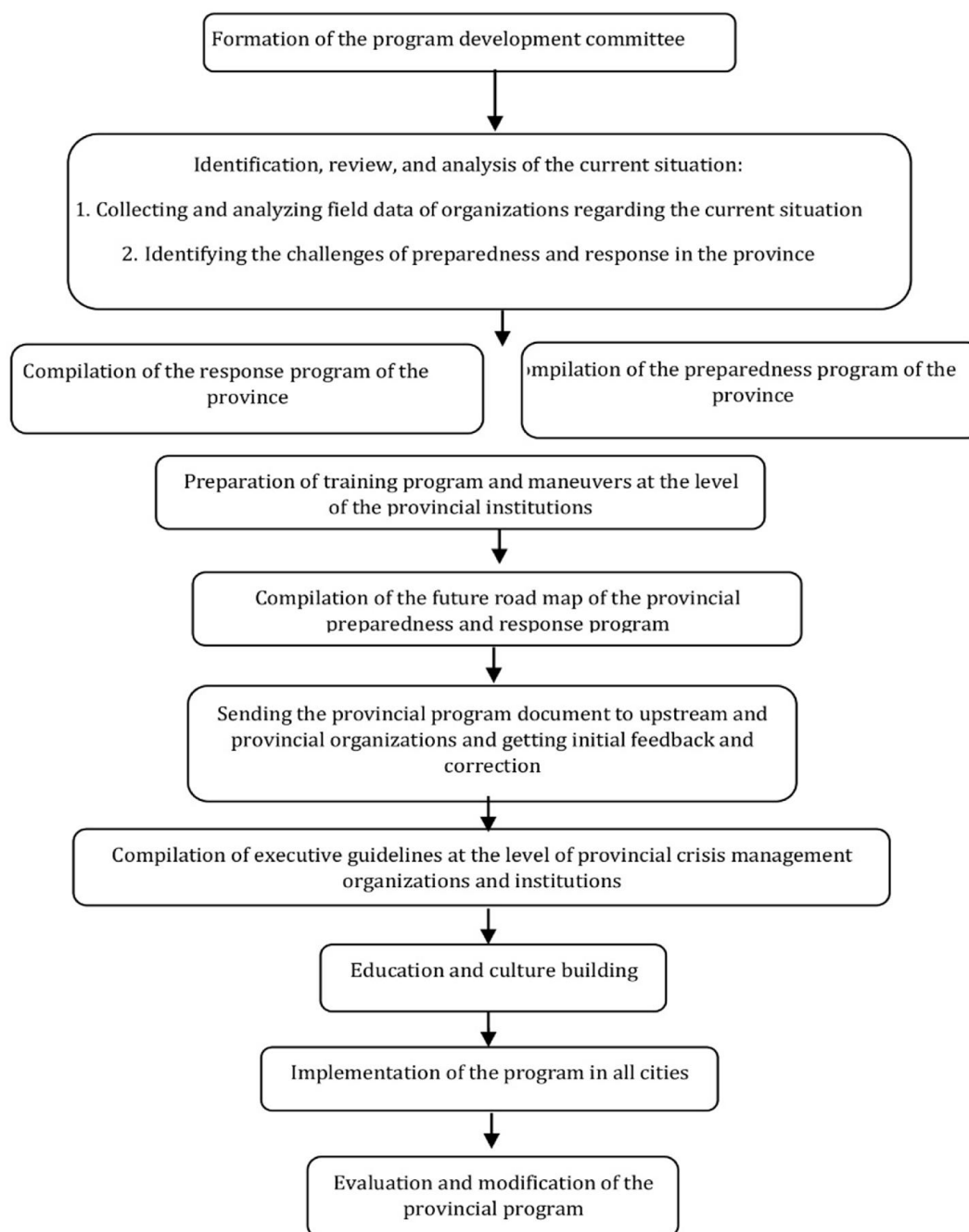


Figure 2. Proposed general framework for developing crisis preparedness and response programs at the provincial level

Identification, review, and analysis of the existing situation

As we know, the program is a proposed methodical framework that specifies how to move from one stage to another. This framework includes how to move from the current situation to the achievement of one or more objective or

ideal goals. Therefore, the first step in developing an operational program is to identify and analyze the existing situation. Crisis management plan, including developing a preparedness and response program, begins with environmental research or investigation of the existing situation, and then comes to the analysis of the existing situation. In

the stage of the analysis of the preparedness and response program at the provincial level, the major and common risks of the province, problems, facilities, duties, and existing programs of responsible organizations have been identified.

For efficient planning, it is necessary first to draw a general picture of the province's current state of preparedness and response in relation to various components affecting crisis management. The key to explaining the current situation is information management. Therefore, in the first stage of the phase of understanding the existing situation, field data on the activities carried out by the organizations related to the response program has been collected. In the second stage of this phase, the challenges posed to preparedness and response in the province have been identified and categorized. The objectives of the analysis of the existing situation in the provincial preparedness and response program are briefly stated below:

- Identifying and prioritizing major and important risks in the province
- Examining plans, as well as scientific and research activities performed in the field of crisis management of the province
- Examining the level of preparedness of responsible organizations and institutions against natural and man-made incidents and crises
- Examining the legal duties and powers of the main responders at the provincial level
- Knowing structures, organizations, and institutions with overlapping emergency response measures in the province
- Examining maneuvers to prepare and respond to emergency situations in the province
- Examining educational programs and management of media affairs in the province
- Investigating facilities of emergency situation management in the province
- Examining the instructions for preparing and responding to emergency situations in the province
- Examining previous experiences of organizations in the province regarding past crises
- Examining the challenges and problems of crisis management in the province
- Examining the weaknesses and strengths of organizations in response to emergency situations

Collecting and analyzing field data of organizations regarding the current situation

The identification of the current situation of Hamadan province regarding the activities carried out in the field of crisis preparedness and response requires field data collection from the institutions and organizations involved in the process of crisis preparedness and response in Hamadan province. To this end, after communicating with crisis management organizations, the required information was collected through a questionnaire. The required data are categorized as follows.

- Plans, studies, scientific and research activities of crisis management at the provincial level
- Documents and procedures developed in the field of preparedness and response program in the province
- The measures taken related to crisis preparedness and response
- Operational plans and programs
- Training maneuvers and programs

Questionnaire used to collect field information from institutions and organizations

1. Have they had a research plan and study on crisis management at the provincial level? If yes, Please provide.
2. Providing any type of documentation they have in the field of preparedness and response to emergency and critical situations. (Such as guidelines, by-laws, statutes, strategic documents, documentation, framework, and implementation method)
3. What measures have been taken so far in the field of preparedness and response to emergency and critical situations?
4. Providing any instructions for preparing for and responding to critical situations in the organization
5. Providing a list of maneuvers that have been performed to prepare and respond to critical situations in the organization
6. Have they considered any facilities for emergency and crisis management in the organization? If yes, mentioned them.
7. Do they have any experience regarding operational plans in crisis situations? What crisis? When?
8. Have they conducted training programs in the field of preparedness for fortuitous events and managing critical situations for the personnel in their organization? What programs? When?
9. Is there a crisis management or passive

defense unit in their organizational chart?

Investigating and identifying the challenges of preparedness and response in the province

By using the data obtained from the literature review, the interview protocol was designed to make it possible to easily find commonalities and differences between the opinions and views of the interviewees, to reduce the risk of the researcher's bias and, as a result, to make the obtained data more reliable, and then to select the main organizations in the field of crisis response to conduct research interviews. In summary, the steps of investigation and identification of preparedness and response challenges in the province are presented in Figure 3.

Determining the questions and themes of the in-depth interview

According to the following list, some questions regarding the weaknesses and problems of crisis management in general and basic challenges, and the weaknesses of each organization in the field of preparedness and response were considered. Moreover, due to the importance of parallel work and overlapping and inappropriate allocation of activities during the crisis, some questions were designed in this regard. At the end, there was an exchange of opinions regarding the solutions proposed by the crisis managers.

Development of a plan respond to crises in the province

The process of developing the response program in Hamadan province has been performed according to the steps specified in Figure 4. In this process, according to the

upstream documents (Crisis Management Law and Executive by-law of the Crisis Management Law), the proposed specific functions of the provincial program were further studied, and the relationship between these functions and the related legal article in the law on crisis management was determined. In the next step, if it is necessary to determine the sub-function for the main functions, the items in the subset of that specific function were specified. In the following, a corresponding relationship has been established between the provincial sub-functions and the management and specific functions of the National Preparedness and Response Program. Finally, according to the relevant sub-function in the national response plan, the responsible, cooperating, and supporting organizations have been identified at the provincial level.

In-depth interview questionnaire

1. What are the weaknesses and problems of crisis management in Hamadan province?
2. State the limitations and obstacles related to the authority and rules within your organization regarding the effective process of preparedness and response to crises?
3. What are the most important basic challenges that you face in the field of crisis preparedness and response in your organization?
4. What do you think are the weaknesses of your organization in the field of preparedness and response?
5. Which operations during crisis response have remained without a trustee?
6. Does your organization's activity in crisis preparedness and response overlap with other organizations?
7. In general, how do you evaluate the preparedness of your organization to respond to possible future crises?
8. If possible, provide some suggestions to improve the preparedness and response process of your organization

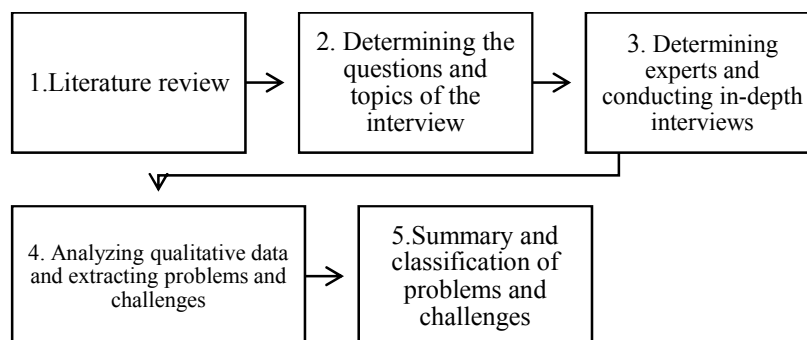


Figure 3. Steps to identify the challenges of preparedness and response in Hamadan province

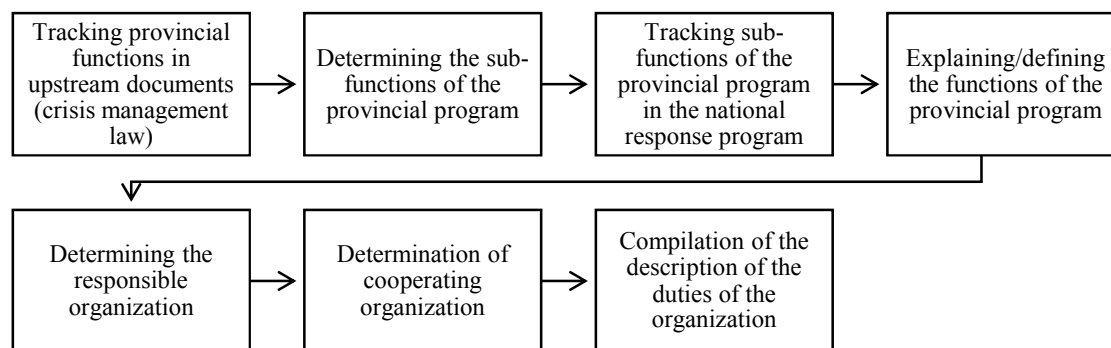


Figure 4. Steps of developing the response program of Hamadan province

Table 4. Coded list of specific functions of the provincial crisis response program

Code	Function title	Code	Function title
F0	Evaluation and compensation program	F16	Program for the management of dead bodies and animals
F1	Provision of shelter/emergency accommodation/sanitary services	F17	Provision and distribution of emergency water supply
F2	Evacuation of people, groups, communities, and domestic animals at risk	F18	Electrification program in emergency situations
F3	Directing and coordinating countermeasures	F19	Emergency refueling program
F4	Communication / management of mass media	F20	Fixed and mobile telecommunications in emergency situations
F5	Application of emergency regulations	F21	Emergency transportation plan
F6	Control and distribution of emergency supplies	F22	Debris removal operation
F7	Search and rescue operations	F23	Fire extinguishing program
F8	Air rescue	F24	Management of internal and external volunteers
F9	Medical aid in emergency situations	F25	The program to maintain the public morale of the victims and provide mental health
F10	Prioritization of casualties (triage)	F26	Mental health program for crisis management staff / rescue workers
F11	Transporting the injured to medical centers	F27	Support programs for operational employees' families during emergency situations
F12	Emergency food preparation and distribution	F28	Program for dealing with Hazardous Materials (HAZMAT)
F13	Receiving and distributing financial/ humanitarian donation	F29	Complex Emergency Management Program
F14	Collection of waste materials / waste management	F30	Management program of Medical Care Monitoring Center (MCMC)
F15	cleaning the environmental pollutants	F31	Mass Gathering Management Program

Definitions required in the response program

Function: It refers to the main activities that must be performed in each phase of emergency management (accidents and disasters).

Responsible organization: the organization which has legal duties related to the activity in question.

Collaborating organization: an organization

that, within the framework of its legal authority and according to its executive capacity, is in charge of a part of the duties and is responsible for the assigned responsibility. The cooperation mechanism is determined based on the agreement between the responsible and collaborating bodies.

Supporting organization: an organization that contributes to realizing the desired activity

according to its capacities and resources with the coordination of responsible and cooperating bodies. The support mechanism is determined based on the agreement with the responsible and cooperating organizations.

Specific functions of the provincial crisis response program

In the guide for developing provincial preparedness and response programs, which is included in the National Disaster Preparedness and Response Plan, 33 functions are proposed, one of which is repetitive, and finally, 32 specific functions have been proposed according to Table 4 for response planning at the provincial level.

Finding

In general, the findings of this research can be divided into three groups as follows. According to the description of the methodology used to carry out the phases of recognizing the current situation and developing the response program of the provinces in the method section (Section 2), the results related to groups B and C of the findings of this article are presented below.

A) Presenting a step-by-step framework to recognize the current situation and develop the response program of the provinces;

b) Analysis of field data collected regarding the state of disaster preparedness and response in Hamadan province;

c) Determining the specialized functions and sub-functions of crisis response and assigning them to the responsible organizations in Hamadan province.

Analyzing the information collected through the questionnaire

In general, field data collection through a questionnaire has various drawbacks, such as the imperfection of the collected information and its time-consuming nature. Nine items from the questionnaire sent by the institutions and organizations were considered. After the completion of the field data collection phase, a summary of several organizations where the relevant documentation has been prepared is presented in Figure 5. For example, regarding

the implementation of maneuvers, and training courses related to the field of disaster preparedness and response, the situation was much better than in other fields, and based on the collected information, 25 organizations have implemented maneuvers and training courses in this field.

The worst field was plans and programs with four organizations, indicating the weakness of the organizations regarding the planning process in the field of preparedness and response and preparation of related documents. Out of about 50 organizations involved in crisis management in Hamadan province, only nine organizations have specific organizational charts in times of crisis; accordingly, the efficiency and effectiveness of the response process will be reduced. In addition, the scarcity of studies in the field of crisis management is clearly evident in most organizations. The lack of quality documentation regarding developing plans, programs, and executive instructions for preparedness and response in many organizations is one of the results of this phase.

Assigning the functions of the provincial response program to organizations

In this section, firstly, the specific functions of the provincial response program are adapted to the legal articles of crisis management, and the sub-functions (specialized functions) are determined. Thereafter, their corresponding functions in the national preparedness and response plan and according to the capabilities of the province, the responsible, cooperating, and supporting organizations of each sub-function are determined. This operation was carried out for 32 specific functions of the provincial response program. After allocating the functions (32 items), the total number of functions included 56 specialized sub-functions in the provinces. For instance, the results of the allocation of function F13: receiving and distributing financial/ humanitarian aid, are presented in Table 5. Firstly, this function is divided into two specialized sub-functions, and in the next step, based on the upstream documents; the responsible, collaborating, and supporting organizations of each sub-function are specified.

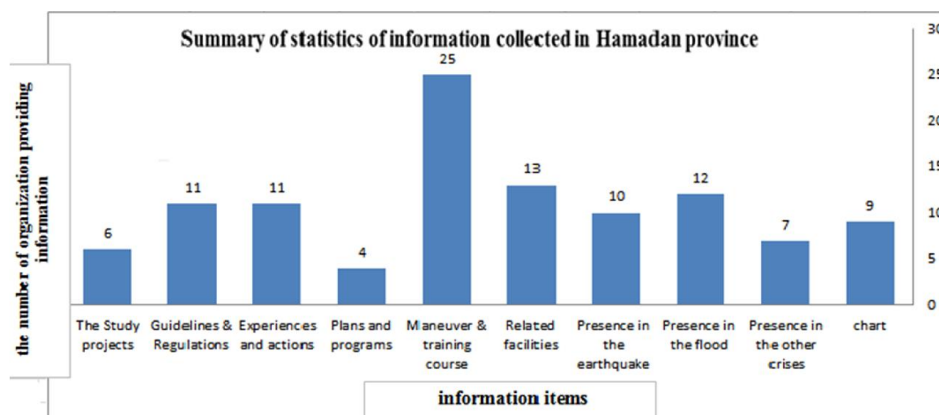


Figure 5. Summary of data collected through the questionnaire

Table 5. An example of the allocation of functions of the crisis response program in Hamedan province

Function	Specialized functions	Related functions in the national program	Related sub-functions in the national program	Related legal article	Responsible organization	Supporting organizations	
F13: Receiving and distributing financial/humanitarian aid	F13-1: Attracting, directing and distributing domestic and foreign government facilities and aid	M6	M6-1	Article 9-paragraph C	General office of Crisis Management	Red Crescent, Society, Welfare organization, the Islamic Republic of Iran Broadcasting, University of Medical Sciences, Imam Khomeini Relief Foundation(RA), Missouri Basij Organization, Ministry of Sport and Youth, Customs, Housing Foundation of Islamic Revolution Imam Khomeini Relief Foundation, Missouri Basij Organization, Welfare organization, Ministry of Cultural Heritage, Handicrafts, and Tourism and, Housing Foundation of Islamic Revolution, Islamic Republic of Iran Broadcasting, and other related institutions in Article 2 of the Crisis Management Law at the discretion of the organization	Management and Planning Organization, Islamic Republic of Iran Police Headquarter
	F13-2: Attracting, directing and distributing facilities and non-governmental domestic and foreign aid	M6	M6-2	Article 14-paragraph 3	Red Crescent		Management and Planning Organization, Islamic Republic of Iran Police Headquarter

Table 6. List of deficiencies in the compilation of the provincial plan

Code of function	Function title	First problem	Second problem
F2	Evacuation of people, groups, communities, and domestic animals at risk		✓
F8	Air rescue		✓
F16	Program for the management of dead bodies and animals		✓
F14	Collection of waste materials/waste management		✓
F15	Program for cleaning the environmental pollutants		✓
F23	Fire extinguishing program		✓
F24	Management of internal and external volunteers		✓
F26	Mental health program for crisis management staff/rescue worker	✓	
F27	Support programs for operational employees' families during emergency situations	✓	
F28	Program for dealing with Hazardous Materials (HAZMAT)	✓	
F29	Complex Emergency Management Program	✓	
F30	Management program of Medical Care Monitoring Center (MCMC)	✓	
F31	Mass Gathering Management Program	✓	

Discussion and Conclusion

The description of the services provided in the National Preparedness and Response Plan for developing provincial programs suffers from some ambiguities. Therefore, in the present research, an attempt was made to provide a step-by-step framework for standardizing the method of compiling provincial crisis response programs in the country. It is worth noting that the proposed framework can be generalized to other provinces. In the process of developing the provincial response program, two problems are posed to the allocation of specialized sub-functions to the responsible, collaborating, and supporting organizations, as well as defining the description of their functions and duties. The list of specific functions that are related to these two problems is provided in Table 6.

Therefore, it is suggested that the Ministry of Interior, the Crisis Management Organization, and the Institute of Natural Disasters, as the main implementers of the national preparedness and response program, should prepare and provide the provinces with guidelines or manuals regarding the issues raised. The first problem is the deficiency in the allocation and definition of the function due to the lack of provision of the corresponding function in the national preparedness and response document and the crisis management law (there is no corresponding function in the upstream

documents). The second problem is a deficiency in the definition of the specific function and the description of duties due to the lack of information in the national response document and crisis management law (there is a corresponding function; nonetheless, the description of the function and duties are not well available).

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Conflict of Interests

Authors have no conflict of interests.

References

1. CREDIT. Disaster Data: A Balanced Perspective. 2020.
2. Merianji Z. Investigating the level of risk tolerance of common hazards in Hamadan province with the approach of compiling a plan to reduce the risk of accidents and disasters. The country's crisis management organization, Hamedan province's crisis management department. 2021 [In Persian].
3. Ranaei Kordshouli H. A framework for the formulation of disaster management strategic plans at national and regional levels. *Disaster Prev Manag Know*. 2015; 5(1): 30-42 [In Persian].
4. Mirzaei Samei S, Hosseini Bidar S, Kokabi Masoud J. Earthquake crisis management with the approach of exploiting the experiences of the Sarpol Zahab earthquake (Hamadan city pilot). The first national earthquake and risk management conference with the approach of the vulnerability of structures and vital infrastructures. 2016 [In Persian].
5. Abbaszadeh Shahri A, Namdari H, Bagherzadeh F, Goudarzi M. Earthquake effect on vital infrastructures of Hamadan province with a special look at gas transmission lines. Iran national retrofitting conference. 2008 [In Persian].
6. Nyusha A, Dehnavi M, Panahi A. Investigation of seismic vulnerability of buildings in Hamadan city. The second national conference of applied researches in civil engineering, architecture, and urban management. 2013.
7. Sepehari M, Ildroumi A, Farrokhzadeh B, Nouri H. Flood risk assessment in the historic city of Hamadan. International Conference on New Research Achievements in Civil Engineering, Urban Architecture. 2014. [In Persian].
8. Varesi Maham A. Investigating the resistance of urban residential buildings against earthquakes (case study: Hamadan city). *Haft Hesar environmental studies*. 2012; 1(1):45-60. [In Persian].
9. Fathollahzadeh M, Roshan Neko P. Flood zoning of Hamedan city using fuzzy hierarchical analysis. The fifth comprehensive conference on flood management and engineering. 2016. [In Persian]
10. Karimi Noor M, Samai H, Artimani M. Preparation of flood map of Hamedan Qaracha region using GIS geographic information system. The fifth National Conference of Watershed Science and Engineering of Iran. 2018.
11. Movagharpak A. Development of an effective strategy in corona virus crisis management with emphasis on the role of NAJA based on SWOT matrix method (case study of Hamadan). *JHPS* 2020; 7(26): 1-19 [In Persian].
12. Habib S, Hejrani A. Social capital and its impact on crisis management in cities (case example: Hamadan city). The specialized scientific quarterly of Hamadan police science. 2015;3(1):113-34 [In Persian].
13. Ghorbani Z. Analysis of water crisis in Hamedan-Bahar desert. The 3rd National-Student Conference on Pasture, Watershed and Desert. 2013. [In Persian]
14. Yazdani V, Zare Abianeh H, Shadmani M. Meteorological drought zoning using GIS in Hamadan province. The first international conference on water crisis. 2017 [In Persian].
15. McCool B. The need to be prepared: Disaster management in the hospitality industry. *J Bus Hotel Manage*. 2012; 2(2).
16. Doroudi H, sepehrifar H. Assessing crisis management in iran based on little john model(a case study of the flood of 2019 in Lorestan, Mazandaran, and Kermanshah Earthquake in 2017). *Disaster Prev Manag Know*. 2019; 9(4): 393-402 [In Persian].
17. Hashemi PS, Sadeghi MM, Safari H. Governance challenges of disaster management network: a case study of Tehran City. *JIPA*. 2017; 9(3): 379-402 [In Persian].
18. Kolahi Dehkordi H, Gholami S. The Investigation and Prioritization of current challenges in practical exercises and maneuver for preparation against natural disasters. *Disaster Prev Manag Know*. 2018; 7(4): 332-9 [In Persian].
19. Kavousi M, Naser Esfahane A, Rashide MM. Explaining the influence of managers' individuality on their management styles in the crisis management process through presenting an applied model (case study: managers and experts of Khuzestan crisis management headquarters). *Disaster Prev Manag Know*. 2019; 9(1): 90-109 [In Persian].
20. Akbar Ahmadi SA, Rasuli R, Rajabzadeh Ghatari A, Pooya P. Presenting a crisis management model with emphasis on human resources management system for hospitals of Tehran. *JIPA*. 2012; 4(10): 1-24 [In Persian].
21. Balcik B, Beamon BM, Krejci CC, Muramatsu KM, Ramirez M. Coordination in humanitarian relief chains: Practices, challenges and opportunities. *Int J Prod Econ*. 2010; 126(1): 22-34.
22. Kovács G, Spens K. Identifying challenges in humanitarian logistics. *Int J Phys Distrib*. 2009; 39(6): 506-28.
23. Kabra G, Ramesh A. Analyzing drivers and barriers of coordination in humanitarian supply chain management under fuzzy environment. *BIJ*. 2015; 22(4): 559-87.