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The Policy Gap and Inefficiency in Public Volunteers' Response to Assist the Hospitals After Natural Disasters in Iran: A Grounded Theory Methodology

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Original Research

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Abstract

Objective: This study aims to explore a public volunteer's hospital response model in natural disasters in Iran.

Methods: This study employed grounded theory using the Strauss and Corbin 2008 method and data analysis was carried out in three steps, namely open, axial, and selective coding. The present qualitative study was done using semi-structured interviews with 36 participants who were on two levels and with different experiences in responding to emergencies and disasters as "public volunteers" and "experts". National and local experts were comprised of professors in the field of disaster management, hospital managers, Red Crescent experts, staff and managers of Iran Ministry of Health and Medical Education.

Results: The main concept of the paradigm model was "policy gap and inefficiency" in the management of public volunteers, which was rooted in political factions, ethnicity, regulations, and elites. The policy gap and inefficiency led to chaos and "crises over crises." Overcoming the policy gap will result in hospital disaster resilience. Meanwhile, the model covered the causal, contextual, and intervening conditions, strategies, and consequences in relation to the public volunteers' hospital response phase.

Conclusions: The current public volunteers' hospital in Iran suffered from the lack of a coherent, comprehensive, and forward-looking plan for their response. The most important beneficiaries of this paradigm model will be for health policy-makers, to clarify the main culprits of creating policy gap and inefficiency in Iran and other countries with a similar context. It can guide the decision-makings in upstream documents on the public volunteers. Further research should carried out to improve the understanding of the supportive legal framework, building the culture of volunteering, and enhancing volunteers' retention rate.

Individuals' lives can be affected by disasters triggered by natural hazards in many ways, leading to such consequences as death, injury, financial loss, loss of life, and illness.[1,2] The International Federation of Red Cross and Red Crescent (IFRC), World Health Organization (WHO), United Nations Office for Disaster Risk Reduction (UNDRR), and Center for Research on the Epidemiology of Disasters (CRED) have recorded 396 natural disasters in 2019, which affected a total of 95 million people.[3–5] Iran is among the top 10 countries in terms of the number of natural disasters, including earthquakes and floods.[6,7] Providing health services in natural disasters is one of the main pillars of handling disasters; therefore, it is absolutely necessary to ensure the health of the affected community.[8] In the preparedness phase, the health-care system must make plans to use its maximum capacity to provide the best services in the response phase.[9] One of the challenges for capacity building is the inability to mobilize human resources in the short-term during disasters.[10] In such circumstances, the use of human resources of predefined volunteer professions plays a crucial role.[11] In a disaster, hospitals and health centers are among the first units to provide optimal and timely health services. This plays a key role in reducing the death toll by rescuing the injured.[12] Without the assistance of community members, policy-makers and governments by themselves fail to fulfill their responsibility due to limited resources.[13] Based on the literature, the first Yokohama Strategy started in 1995 after having International Decade from 1980s for reducing risk of disasters.[14] In recent years, the UNDRR has emphasized the role of society in reducing risk of disasters. The Sendai Framework for Disaster Risk Reduction 2015-2030 was endorsed by the United Nations (UN) General Assembly in June 2015.[15,16]

In disasters, local people are one of the first groups to come to the scene to help the injured.[17] The lack of knowledge and skills in the community causes not only further problems, but also trouble in providing assistance. This requires sufficient training and skills in various fields of disasters.[18] In addition, volunteering has mutual benefits for both community and volunteers.[19] Studies have indicated that individuals are willing to provide services to people affected by disasters. Evidence shows that pre-identifying volunteers can play a valuable role in achieving disaster management goals in all its phases, from mitigation to recovery.[20] Studies show that the selection, preparation, and analysis of volunteers are taken into account during disasters.[21,22] In a study examining the role of hospital volunteers in planning and responding to disasters in Canada, it was found that after organizing and planning, the level of reliability and training received by public volunteers has increased, and sufficient familiarity with the hospital environment and performance has been acquired.[20] Studies conducted on volunteer forces in Iran are mostly quantitative, focusing on issues such as volunteers in the Red Crescent population[23] and the factors of recruitment and retention of volunteer forces and their incentive and technical tools.[24] By the way, in a qualitative conceptual model, the management of specialized medical volunteers in hospitals has been focused on during disasters.[25]

There are several types of volunteers, each of whom can do different things in the event of a disaster, and in addition to this, their management is different. One type of volunteer is the employment volunteer. Other types of volunteers include the public volunteers who are not called based on the required expertise or equipment at the time of response. Meanwhile, the health system volunteers are the ones who participate in matters related to the health system.[26].In this study, "public volunteers" include (1) those who are not called based on the expertise required at the time of response[26]; (2) but they can assist based on their expertise and services in any part of the hospital when necessary[27]; (3) those who may provide medical and nonmedical services; (4) those who may or may not possess skills necessary to respond to the current disaster, not associating with any part of the existing emergency management response system[19]; (5) Those who are close to the scene of the disaster and locally more familiar with the needs, culture, and spirit of the people of the area.[21] These public volunteers provide nonmedical services such as caring for patients in green areas triage in accidents in hospitals, logistics, support, assisting the medical and nursing community, helping to create a positive mood and emotional support for patients and support patient care in the field of nonspecialist affairs. They also provide spiritual assistance to the families and survivors of the sick and deceased, and medical services such as medicine, nursing, laboratory, radiology.

In developed countries, numerous management systems are seen to have been designed and are still being designed and updated for volunteers in hospitals, while Iran has failed to have developed much in this area, neglecting the impact of this huge force to counteract disasters.[28] In effect, volunteers provide many economic and social benefits. But the noteworthy point is that why this issue has not been considered in Iran despite the strong culture of volunteering.[29] Many Iranians volunteer in emergencies and disasters, yet there are inefficient regulations for organizing them within the framework of the health-care system.[30] Previous disasters show that the management of volunteers has been one of the great challenges with which relevant authorities face.[31] Here, grounded theory (GT), as a qualitative approach, can focus on issues in which we have little knowledge or when comprehensive studies have not been conducted. This theory can be used in the process of constructing a codified theory through organized data collection and inductive analysis.[32] Therefore, considering that a comprehensive study has not yet been conducted on the use of public volunteers' local capacities in hospitals during disasters, including the current COVID-19 pandemc, this study aims to improve public volunteer preparedness and explain the process of hospital response of public volunteers.

Methods

Study Setting

This study is a qualitative research using the GT methodology conducted in 2019-2020 based on the Strauss and Corbin 2008 method.[33] Glaser and Strauss argued that the main issue was the discovery of theory based on the systematic collection of data in social science research. The researcher in GT does not start his/her work with predetermined hypotheses, but with the emergence of concepts determining the research questions and the way of working.[34] With the presence of volunteers in disasters, interviews were conducted in two levels with different experiences in responding to emergencies and disasters, including experienced "public volunteers" and "experts." This method being highly effective in explaining facts, the GT was a good approach for the present study. The paradigm model was used as a tool to help the researchers to think about relationships within the collected data to know the context and to link it to the process.[35] A concept-indicator model of analysis was used in the GT, which makes use of the method of constant comparison. Data were obtained from actions and events observed, recorded, or described in documents in the words of interviewees and respondents. Afterward, the similarities and differences of empirical indicators obtained from the data are compared. Then, a core category was obtained from the data through identifying underlying uniformities in the indicators. Three types of coding were used: open coding, axial coding, and selective coding. In this work, the paradigm model represents the final result of qualitative analysis of the grounded theory. Causal conditions, context conditions, intervening conditions, strategies, consequences, are linked to the core category.[35] The present study was conducted in Iran, and the participants included the academic experts, managers, and public volunteers in their workplace who were readily accessible to the researcher.

Study Participants and Data Collection

In this study, two levels of participation were used, including experts and experienced public volunteers. There are public volunteers who are not called based on the expertise required at the time of the response, but voluntarily help in any area in the hospital where they are needed. This can also be based on their expertise as well as the services they are able to provide. They may provide medical and nonmedical services. They arrive voluntarily at the scene of a disaster and may be a resident, native, and local of the affected community. These volunteers may or may not possess skills necessary to respond to the current disaster because they are not associated with any part of the existing emergency management response system. Participants from public volunteers were used because they had practical experience in hospital disaster response and were fully aware of the issue. Furthermore, following a disaster, the people of the area themselves rush to the aid of the

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injured people until the rescue forces arrive.[13] The rest of the participants were experts and executives because managers' knowledge and practical experience play an important role in achieving goals. Managers have experience in rescuing, operational planning, training, and policy-making.[36] All participants had practical experience related to disasters, including the experience of emergency evacuation, psychosocial support in disasters, disaster planning, coordinating emergency management, triage, disaster logistics, and disaster training. The samples were drawn from different organizations (Table 1). In addition, volunteers with practical experience and knowledge in the field of natural disasters were included. All participants were willing to participate. The experts had at least five years of disaster management experience, clinical experience, volunteer recruitment and organization, training during disasters, decision-making, or coordinating emergency managers at disasters. Public volunteers had experienced two times of presence and assistance at disaster times. Participants, who were from different cities in Iran, were interviewed between 2019 and 2020. In the current study, sampling was done through purposeful sampling method. Then, according to the concepts and categories and subcategories, the theoretical sampling technique was used to develop the model. The sampling process continued until theoretical saturation was achieved.

Research data were primarily collected by means of face-to-face interviews by a Ph.D. candidate (F.J) and data analysis was done in collaboration with other members of the research team. The original question in a GT study is often broad and open-ended. New questions are raised during the analysis, leading the researcher in directions often unanticipated at the beginning of the research. Unstructured interviews prepared the richest source of data for theory building. In addition, this type of interview gave the researchers the ability to pursue through on subsequent interviews, concepts that are relevant to evolving theory, and the need for further explanation.[35] The structure of the interview was determined based on the objectives of the study. Before starting the study, the interview method and its questions were confirmed with the help of experts on health in emergencies and disasters. The questions were designed based on respondents' statements, education, expectations and motivation. Initially, three interviews were nonstructured and then 28 subsequent interviews were semi-structured. This was performed to compare the gathered information and organize the collected data.[32,33] After introductions and warm up, the researcher explained the objectives of the study. The interviews were started with general questions followed by more specific questions based on the research objectives. First, the interview was conducted with general questions, including "Based on your experiences, what factors challenge the presence of volunteers in the hospital response to emergencies and disasters?", "Describe the problems of volunteering.", "What facilities can contribute to the presence of volunteers in the hospital response to disasters?", Then, the experts were asked more specific questions: "According to your practical experiences and theoretical knowledge, what are the components of the model"? All interviews were conducted by a Ph.D. candidate (F.J). Each interview was conducted in person with the consent of the participants in a period of 15 to 65 min. In cases where it seemed that there were ambiguities, a second interview was conducted, which lasted between 12 and 38 min, with an average of 20 min. To ensure accuracy of the interview content and avoid missing the data, the interviews were recorded using a digital recording device and field notes were written when necessary. After each interview, the transcription was typed in Persian in the Word format.

Table 1. Demographic characteristics of experts and volunteers in the study to achieve a suitable model for public volunteers in hospital response to emergencies and disasters in Iran

Variable	Description of the variable	Frequencies	%
Gender	Female	7	19.4
	Male	29	80.5
Age (y)	30-40	8	22.2
	41-50	12	33.3
	51-60	16	44.4
Education	Diploma	2	6
	Bachelor	6	16.6
	Master	5	18
	PhD	23	63.8
Type of volunteer	Executive managers of the International Red Cross and Red Crescent Movement	4	11.1
	Relevant officials at the Ministry of Health and Medical Education	5	13.8
	Hospital managers	3	8.3
	The Head and staff of the National Disaster Management Organization	3	8.3
	Academic experts	4	11.1
	Hospital emergency department staffs	3	8.3
	Experienced public volunteers	14	38.8
Work experience (y)	5-10	9	25
	11-15	18	50
	>15	9	25
Role of participants in emergencies and disasters	Public volunteers	14	38.8
	Experts	22	61.1
Total number of participants		**36**	**100**

Data Analysis

In this study, first, the audio file of the recorded interviews was listened to several times. Then, verbatim transcription was performed. Strauss and Corbin 2008 method has been used to analyze the data.[37] For in-depth understanding of concepts, they were classified manually by paper and pencil. Data analysis was carried out in three steps including open, axial, and selective coding. First, the research questions were developed based on the purpose of the study. Then, data collection was done along with analysis up to saturation stage. For open coding, all interviews were transcribed on paper. During the review of the codes, the duplicate phrases or those irrelevant to the topic under discussion were removed. The original code was obtained. Then, the collected data on different aspects of the presence of public volunteers in the hospital response stage were examined and the implications were identified. The categories were also named based on the conceptual load of each category. Constant comparison method was used during the interviews and data analysis. Questions were asked about the data, case comparisons, similarities, and differences in the presence of public volunteers in the

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response phase, and similar cases were categorized until the initial category was finally constructed.

As to open coding, axial coding was written through comparisons and raising questions about the presence of public volunteers. Axial coding was oriented toward discovering relationships and relating categories to each other in line with a paradigm of volunteers. The first categories were grouped based on similarities and differences, and finally the main categories were formed on the basis of conceptual relationships with each other. In this stage, the titles extracted from the data were classified and compared according to the presence of public volunteers in the response stage. By comparing different concepts, commonalities were discovered between them in terms of the presence of public volunteers, and similar concepts were classified into forms of Strauss-Corbin coding paradigm: (1) causal conditions, (2) phenomenon, (3) context conditions, (4) intervening conditions, (5) strategies, and (6) consequences for the presence of volunteers in the hospital response stage. Finally, selective coding was written as the process of selecting a phenomenon for the central axis and connecting all categories to that central axis for the presence of public volunteers in the hospital response stage. The main idea is to expand the basic story line around which everything revolves. Eventually, the theory and the final model were developed together with the description of the processes of hospital volunteering with public volunteers during disasters.

Rigor

To ensure the validity and reliability of the study, Lincoln and Guba method were used. Four criteria of Credibility, Confirmability, Transferability and Dependability were considered.[38,39] Data analysis was done in collaboration with other members of the research team. For Credibility, the validity of data quality analysis was provided by allocating sufficient time to the data. Long-term engagement with participants, constant comparison of participants' expressions, and understanding of their experiences were performed by a PhD candidate (F.J) during weekly research team meetings. Using the member check technique, some of the participants' expressions were returned to the participants to ensure that the codes and their interpretations were correct, and the codes that were not expressed by the participants were corrected. Expert check was made by five experts who were not involved in the study and were not interviewed. The data were given to these 5 qualified experts in this field to determine whether or not they have a similar understanding of the data. Interviews were read frequently with regular peer feedback. A researcher was involved in all stages of data collection, interviews, and data analysis. For confirmability, data verification, noninterference of personal bias, and nonbias in various cases of the research process were analyzed by the research team using notes and data neutrality in writing notes. In addition, the researcher wrote memos during the interviews, quoting some of the interviewees' sentences directly by bracketing.

For transferability, the research team shared research findings related to "volunteer experiences in the hospital disaster response phase" and the results of the study could be a source for informing other researchers in similar situations about the disaster volunteer process. They helped to increase the relevance of the data to the context under study by providing more details about the expert and public volunteer participants and the characteristics of the environment.

For dependability, the research team tried to provide all the details as to how to collect data and how to make decisions, interpretations and analyses in the research process. This helps to accurately record the presence of public volunteers in hospital disaster responses by guaranteeing the accuracy of the procedures followed and their understandability. This is true with the use of sufficient documents and evidence providing the traceability of the research process for people outside the research.

Results

In this study, the data analysis based on GT showed that 721 initial codes were recorded, duplicate codes were removed and finally 572 codes were obtained which were illustrated in different parts of paradigm model (Figure 1).

Causal Factors

According to the grounded theory method, "causal conditions" are events that give rise to research phenomena.[39] In this study, based on the participants' experiences, lack of a centralized organization for volunteer management, lack of use of experience gained from disasters, lack of structural processes in disasters, lack of sensitivity of managers to disaster prevention and disaster preparedness programs and the presence of disaster volunteers in response, hospitalization, and lack of a law for volunteer work were cited as causal conditions. Based on the participants' experiences, there was still no authority in the country to manage volunteers. Due to the various political factions and different views of policy-makers in volunteer management, it seems to be impossible to make a unified decision. It is not clear in which areas or conditions the volunteers are allowed to be cooperated with. In addition, the legal framework for the use of volunteers as well as the problems and restrictions of using them in the health-care system has not yet been defined for managers. Also, safety standards and volunteer safety principles for the injured are not regulated.

In this regard, as maintained by (E19): "... The first thing to pursue is to clarify the upstream documents for the public volunteers' use. In the natural disasters and even during COVID-19 (Coronavirus disease 2019) pandemic, the challenge of recruiting and employing public volunteers was clearly observed. Meanwhile, in the healthcare system, not every university or hospital can act as it pleases ...".

According to the Participants, in Iran, all kinds of natural disasters have occurred in a short period of time and each time in a different part of the country; therefore, the society has greatly suffered human and financial losses. Regrettably, managers and officials never seem to learn from disasters such as the Golestan flood in 2019, nor do they use research groups' experiences.

In this regard (E15) stated: "... After the disasters, we normally observe the influx of injured people, patients and others to hospitals, facing the challenge of the large number of injured people. This problem has been repeated numerous times in emergencies, yet there is no plan to manage it."

Some participants stated that there are defects in recruiting volunteers and there is no program for recruiting public volunteers and no specific instructions and protocols to be provided. Managers recruited volunteers with different perspectives at different times. The participants believed that presently, at the corona pandemic era, we witnessed that the recruitment of volunteers was on a temporary and unplanned basis. Meanwhile, the government faces a shortage of funds and numerous

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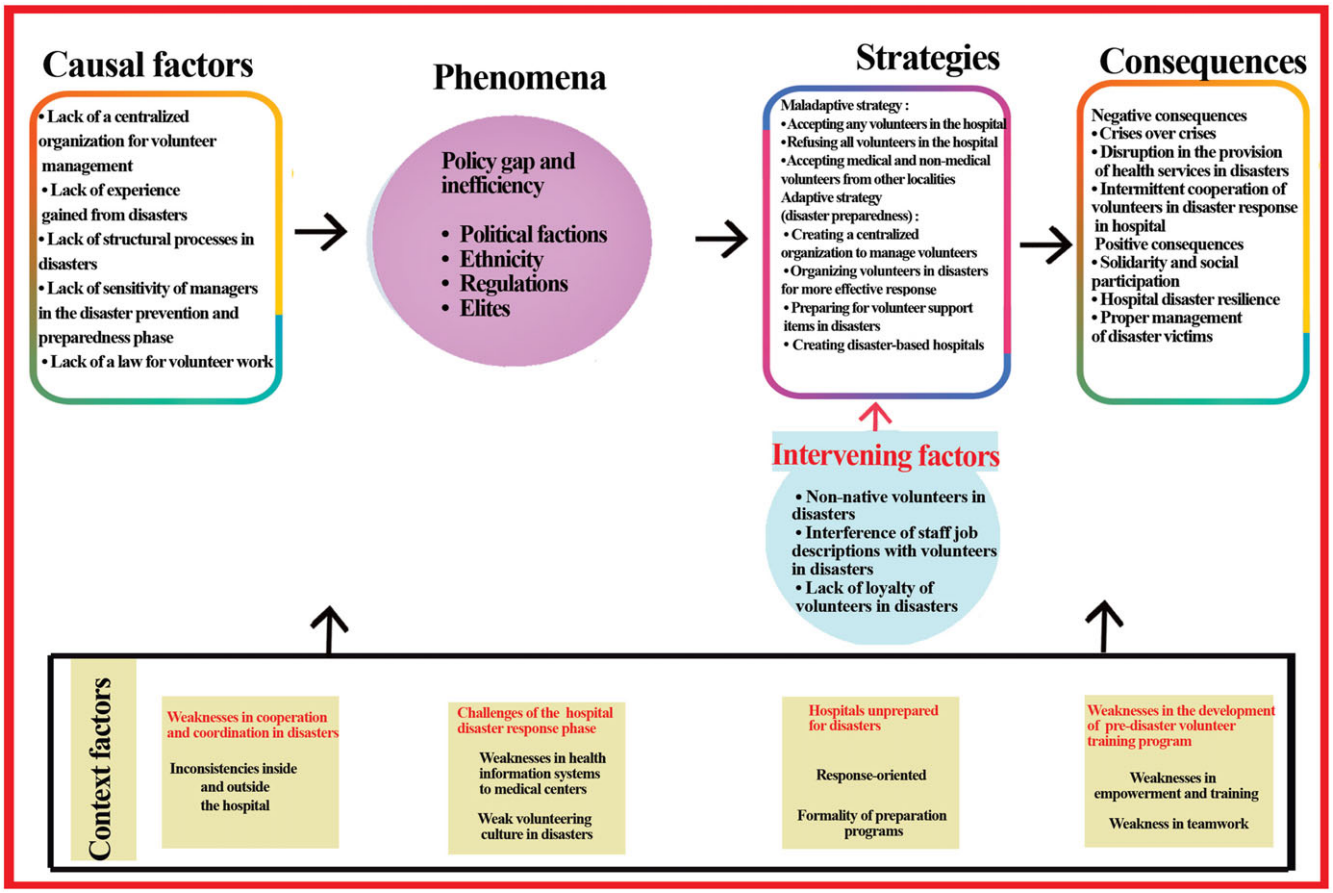

Figure 1. Paradigm model explaining the presence of public volunteers in hospital response to emergencies and disasters in Iran based on grounded theory.

organizational barriers, including administrative bureaucracies, to build the infrastructure of the public volunteer center.

In this regard, Participant (E14) stated: " . . . There is no specific process for recruiting, training and properly employing volunteers. In the COVID-19 pandemic, we did not know where and how to recruit the right public volunteers so that we could use their experiences in activities . . . "

Based on the participants' experience, managers and supervisors in hospitals have not yet taken disaster management seriously. They have not been trained in disaster management and are confused when making their instantaneous decisions. Most managers fail to identify crises and have no plans for them. Most importantly, they do not have a strong will and determination in the face of disasters. They have no clear understanding of what happens when a disaster hits because they have no experience in this field.

Participant (E12) said: " . . . Our managers in hospitals are not sensitive to disasters. They 'manage in the moment' and only think about the responses; they do not think about the causes of the disaster and do not know what to do afterwards."

According to the participants' experiences, policy-makers, legislators in parliament, and officials of health-care organizations lack a unified procedure for making decisions on regulating the public volunteer management. There is no specific protocol to recall public volunteers in the country and no plan to recruit public volunteers in the country, nor is there a systematic procedure for the participation of public volunteers. There is no specific job description or agenda for volunteers, and each organization acts based on its own discretion.

Participant (E13) said: " . . . There is no legal basis for recruiting public volunteers. No protocol has yet been defined for volunteers by legislators and responsible institutions in terms of insurance, safety and ethics. Each center will have to act individually."

Context

"Context" is a situation that affects the research phenomena.[40] Fortunately, there are many volunteers in Iran. In fact, Iranian people have always proved that they care about their fellow compatriots in disasters by donating and collecting humanitarian aid, food and other items. The needs of the injured is another matter that can be addressed by volunteer relief forces. Weakness in the development of public volunteers training programs, unprepared hospitals, challenges of the hospital response phase, and weakness in cooperation and coordination in disasters are among the background factors. According to participants, the public volunteers training process was inefficient. Developing the volunteer training programs is not based on a common language. There is no disaster education in schools and universities. Volunteers' abilities are not measured according to the criteria of literacy, expertise, and

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interest. Public volunteers have not received training in dealing with pandemic diseases such as COVID-19. The courses are theoretical and have not been associated with repeated exercises, and different scenarios have not been prepared for them.

Participant (E08) stated, "... the methods of training volunteers are not efficient. There is not enough first aid training for them. They do not practice with different scenarios to get acquainted with the disaster situation. Disaster simulation is not performed either...".

According to the participants, despite the nonprofessional actions during disasters and the need to manage it, the country's hospitals are poorly or moderately prepared. Needs-assessment for volunteers has never been performed in hospitals before disasters, and the programs developed for disasters and volunteers are mostly a matter of formality, failing to work properly in practice. Participants believe that, although hospitals have formulated disaster preparedness programs and monthly meetings of the disaster risk reduction committee, these programs, in most cases, have been formulated solely on paper. Hospital managers are response-oriented, taking measures to manage and respond to the crises only once disasters strike.

Participant (E09) stated: "... After the Plasco incident in Tehran in 2016, we were particularly astounded. The hospitals were not prepared. According to the written plan, we had to announce the disaster code, gather in the Incident Command room to make a plan, but nothing happened."

Participants stated that there were countless challenges in the response phase. Hospitals face a shortage of manpower in disasters and increased workload. In most emergency events, after being notified of disaster and announcing readiness, hospitals are unaware of the progress of the disaster or the number of potential casualties to be taken to the hospital. There is still a weakness in risk information systems to medical centers. For example, in the COVID-19 pandemic, even health-care volunteers were sent to medical centers without training or needs assessment, and may have harmed themselves and their patients.

Participant (E17) said: "... We do not have a pre-disaster assessment of the supply of forces. We do not know the needs of hospitals to respond effectively to emergencies and disasters. We observed in the Covid 19 pandemic that in the response phase, unskilled volunteers enter the scene without a plan, acting emotionally ...."

According to the participants' experiences, internal and external coordination is an important factor in events. Caring for the injured and continuing to care for hospitalized patients requires cooperation and coordination between different units, including coordination between hospital departments, such as radiology, laboratory, reception center, etc. There is no coordination for the presence of public volunteers and, ultimately, they are not evaluated and monitored. In addition, there is an urgent need for extra-organizational coordination, such as contracts between hospitals and fire departments, municipalities, or private hospitals. Also, there is no voluntary predisaster propaganda, and no decision has been made beyond the capacity of predisaster hospitals.

Participant (E05) stated, "... During disasters, we do not have good communications with other centers and higher-level organizations. We are not even aware of the hospitals in our area. We do not know what is happening in our area or around us; we know nothing about hotels or mosques near the hospital so that we can use them when there are no empty beds..."

Intervening Factors

Intervening factors are conditions from which strategies are affected.[40] According to the participants' experience, public volunteers' unfamiliarity with the area, the interference of the staff's job descriptions in the public volunteers, volunteers' lack of loyalty in disasters are intermediary conditions.

Participants stated that one of the intervening factors in the hospital response was uncontrolled volunteers that come from distant places and disturb the function of affected hospitals. Public volunteers coming from different cities to help a devastated city were unfamiliar with the culture and language of the area. It seems that the volunteers from distant places could not help medical facilities because they have less time to adapt to the environment. In general, the use of native volunteers in a disaster should be considered in the health-care management programs because less time and money are required to train them and they adapt more quickly to the environment.

Participant (V11) stated, "... An important challenge is the non-indigenous nature of the volunteers. When volunteers go from one city to another, they are not familiar with the language and culture of the area and the environment ..."

Another intervening factor, according to the participants' experiences, is the interplay between the duties of the hospital staff and the public volunteers, in such a way that the abilities and academic expertise of the public volunteers in determining the individuals' job descriptions, the responsibilities of each team and each person, as well as their working method and its time period have not been taken into account. The volunteers' job description was not clear.

Participant (E 18) claimed, "... public volunteers' management in hospitals has not yet been defined. There is no specific task description for volunteers in different areas, and the medical staff and volunteers have not been taught how to work together, and there is an interference in their job description."

Participants stated that the public volunteers do not have deep loyalty in disasters. Public volunteers in disasters do not have complete loyalty to the goals of the official group or institution. There cannot be a determined and specific plan for them. Public volunteers' willingness to participate will diminish after the end of the acute phase of the disaster, leaving the disaster scene and the medical staff alone and facing lack of manpower.

Participant (E22) mentioned, "... public volunteers are only interested in helping in the acute phase of the incident. After a few days, their help can no longer be relied on and planned for. In the following days, their presence will be diminished, leaving the area without prior permission."

Core Category

The Core category is the phenomenon that is the basis of the research process.[38] The main phenomenon of this study, based on the participants' experiences, was the "policy gap and inefficiency." This means that there is a serious difference between understanding the challenges available to public volunteer management and translating these challenges into appropriate and practical policies and standards. Based on the participants' experiences, a coherent, comprehensive, and forward-looking disaster risk management plan has not been developed throughout the country. Natural disaster management in Iran is often limited to the stage at the time of the disaster and after the incident, and no specific rules are specified for the various components of the disaster cycle.

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In the Azgaleh earthquake (Kermanshah province, Iran), in 2017, member organizations of the disaster management headquarters provided services mainly independently. In fact, the roles and responsibilities in disasters were not properly defined for most agency managers. The lack of a legal system for the presence of volunteers in disaster was cited as a major problem by participants. Four of 22 expert's participants stated that fake health-care providers were performing malpractice procedures. In the absence of a legal system and safety controller, patients, and staffs, there are two aspects. One is that "fake" physicians did malpractice. The other is that appropriate assessment of safety of relief-aid workers was not conducted due to the involvement of uncoordinated health volunteers. Another policy gap and inefficiency issue was ethnicity. Participants said that ethnic diversity and different cultural patterns cause differences of opinion and influence decisions in disaster management. Ethnicity is one of the focal points in the field of electoral competition for members of parliament and managers. Also, the elites with their intelligence and talent can acquire important managerial roles and play a decision-making role. Government laws and regulations also influence decisions. All of this indicates that there is a policy gap in recruiting volunteers.

Participant (E20) claimed: " . . . Areas where we are allowed to use public volunteers are not clear. There were also no specific rules for identifying and recruiting public volunteers. Some came to the affected areas to help without being identified . . . ."

Action/Interaction Strategies

Strategies are a set of actions/interactions that are directed around the main phenomenon.[40] All participants expressed some strategies based on the formation of the main phenomenon, context, and intervening conditions. According to the participants' experiences, the strategies comprise two categories: maladaptive and adaptive strategies. Maladaptive strategy exacerbated the current situation and "policy gaps and inefficiencies". Maladaptive strategy included accepting any volunteers in the hospital without training and coordination, refusing all volunteers in the hospital, accepting medical and nonmedical volunteers from other localities.

Expert participants also maintained that there was no suitable mechanism for attracting public volunteers. In Iran, public volunteers are still not recruited through non-governmental organizations (NGOs) and grassroots organizations. There are still no bases for recruiting and selecting public volunteers. Moreover, there is still no proper infrastructure for inviting and recruiting volunteers in the medical system.

Expert participants stated that there was no single system for registering public volunteers in different specialties. On the other hand, with regard to recruiting volunteers, there is no special program for public volunteers' mental and physical follow-up. Nor are motivational measures in the system to retain them.

Participant (V06) said " . . . Some people may believe that it is not necessary to follow up on volunteers who get tired and return home after working for a few days. However, these volunteers should normally be given priority in the follow ups since their absence may be due to mental or physical problems . . . ".

According to the interviewees, adaptive coping techniques, which solve the problem of "policy gap and inefficiency," will include the need to establish a centralized organization for public volunteer management, volunteer organization, volunteer planning, preparedness support, and hospital preparedness.

Participants mentioned that it was essential to create a centralized organization to manage public volunteers. This organization can communicate, follow up, and evaluate the necessary coordination for communication between organizations, and perform the necessary training, the development of scenarios, and the invitation and recruitment of public volunteers and their retention and follow-up. The organization also needs to have the necessary executive power to enforce the rules and regulations.

According to the participants, through proper organization and planning for public volunteers, managers and heads of the Ministry of Health can use them as a great repertoire of health workforce. They can increase the staff's efficiency in the response phase. Proper use of public volunteers can be very economical. Public volunteers can also support victims and survivors, taking on disaster-related support work. With careful planning for the public volunteers in hospitals, authorities could easily incorporate them to help relieve the congestion of the injured and thereby prevent the collapse of the hospitals in emergencies and disasters.

Participant (E16) stated, " . . . in the covid-19 era we lacked pre-planning and organization for the valuable human resource that contributes both to the costs of the hospitals and to the health force . . . .".

Public volunteers believed that, in disasters, as in the case of COVID-19 pandemic, public volunteers in hospitals managed to take an active part through economic contributions such as the provision of items and equipment for medical staff and patients. They packed masks, personal protective equipment, and food to assist in the COVID-19 pandemic, or volunteered full-time or part-time to help with the organization's required activities, while managers provided amenities (water, food, accommodation) and support (replacing people during long shifts) to make a good environment for volunteers. The establishment of accommodation camps and the provision of make-shift facilities for public volunteers were among the measures that had been successfully taken in several medical centers.

Participant (V10) stated that " . . . in Bam earthquake, due to the turmoil of the situation, no plans were made for the assisting (rescue) groups that were dispatched. Food, water and accommodation were not provided for them . . . "

Consequences

Some categories represent the results and consequences that result from the adoption of strategies.[40] According to the participants, the consequences resulting from the strategies are twofold: Negative consequences and positive consequences. An instance of the negative consequences of the successive disaster challenge " crises over crises" is the disruption in the provision of services during disasters and the intermittent cooperation of volunteers in disasters. Nevertheless, the positive consequences are: solidarity and social participation, hospital resilience, and proper management of disaster victims.

Untrained public volunteers create a bigger disaster by their presence at the scene, causing serious injuries to themselves and the injured. In the 2017 Kermanshah earthquake (Kermanshah province, Iran), a host of people went to medical centers and hospitals, which created a new challenge. In addition, a hospital collapse occurred when the injured and their companions rushed into the hospital during the disaster.

For example, Participant (E02) said: " . . . one of the challenges for public volunteers without training is 'crises over crises'.

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In 1990 Rudbar-Manjil earthquake, a vast number of people rushed to the hospital to help the injured. But not only did they fail to help, but they also disrupted the operation of health workforce . . . "

Some expert participants believed that one of the negative consequences of disasters was disorganized servicing, suggesting that there was a lack of coordination between the hospital staff and the public volunteers, and that the excessive excitement of the public volunteers and the presence of companions disrupt the servicing process. Due to the increase in the number of injured and the medical staff's involvement in responding to the medical needs of the injured, the provision of routine medical care for hospitalized patients was also disrupted, endangering the lives of patients and the injured. This is the reason why gate control is necessary in disasters. Random entrance of injured patients and unorganized action of hospital staff will create a chaos.

Another negative consequence according to the expert participants was the public volunteers' transient cooperation due to the fact that they were not covered by the Working Liability Insurance. No one takes responsibility for the public volunteers' problems and supports them. In fact, they are not evaluated and monitored during the service, either. Many public volunteers are not physically and mentally prepared to work in disaster situations, leaving the disaster scene without coordination.

In this line Participant (V14) said " . . . given the fact that public volunteers are not paid and have no commitment to the health organization, they may leave the disaster scene when conditions become too tough for them to tolerate."

According to some experienced participants, one of the positive consequences is the public volunteers' presence for the proper management of the injured. When public volunteers are trained, they can also assist in the prioritization and triage of the injured. They can be effective in assisting the medical staff in other parts, such as moving patients and caring for patients in green areas of the hospital during disasters so that hospital staff can work in key areas such as operating rooms, making it possible to effectively manage injuries and reduce death toll.

Another positive outcome is solidarity and social participation, being present in the hospital response phase, public volunteers not only help the medical staff to provide better services, but they can also reduce the fatigue and workload of the medical staff. Moreover, medical staff can do more specialized tasks and leave support jobs to the volunteers. This increases social participation and solidarity between people and medical staff and, as a result, creates a double incentive to serve.

Participant (V13) stated, " . . . better and more effective management will not be achieved without public volunteers' presence. People blocked the flood ways in the Golestan floods (Golestan Province 2019) and packed personal protective equipment for staff and patients during the covid-19 pandemic. In these disasters, one could easily observe the formation of social solidarity and public participation . . . "

Another positive outcome of prepared and resilient hospitals is that with the presence of public volunteers in hospital response, it is possible to get help from public volunteers in the overcapacity phase, compensating for the shortage of manpower in different units of the hospital and managing the hospital resources and equipment. Once volunteers help the hospital by preparing food packages or donating such items as blankets and sheets for patients, hospitals can endure longer with better disaster management.

Participant (E21) stated, " . . . effective hospital management and resilience, reduced vulnerability, reduced mortality, reduced costs and financial loss are all positive outcomes of the presence of public volunteers . . . "

In general, the results of this study showed that experts and public volunteers provided different experiences with the proposed model. Experts' focused more on causal, intervening factors, strategies, and consequences, and volunteers' focused on context factors and problems.

Discussion

This study aimed at explaining the public volunteers' process of hospital response to natural disasters in Iran. This is one of the studies performed by the GT approach. The important findings of this study are discussed in more detail based on the components of the proposed model to help health-care policy-makers and promote community health. The main core category in this model was the "policy gap and inefficiency." According to the participants, the main causes of policy gap and inefficiency were the presence of factions, ethnicities, elites, government laws and regulations.

One of the most important and positive effects of political factions is their role in formulating public policies to protect the country against disasters. Furthermore, national coordination, strengthening the law and discipline in society, and elitism in society play key roles in this regard.[35] Government officials and parliamentarians can also use resources to strengthen policy-making and regulations, and improve disaster risk management in terms of prevention, mitigation, preparedness, accountability, rehabilitation, and reconstruction, and take measures to reduce disaster risks and sustainable development.[41] Participants stated that one of the factor's determining decision-making is ethnicity and individuals' capacities and abilities.

In a study, Mehregan et al. stated that the variable of ethnicity showed that, in disasters, households provided more material assistance to those who were of the same ethnicity and language.[35,42] According to the participants, the intelligent elite, with high talent and skills, can reach high managerial positions and be placed in decision-making positions. In the book, The Revolution of Management, Burnham pointed out that elites gain management positions and reach decision-making power,[43] while Seifzadeh noted that elites' roles in decision-making was not valued, stating that decisions are made under contextual conditions.[44] Participants also mentioned the role of government laws and protocols in decision-making. Part of the government's role is played by laws and regulations that facilitate decision-making in the face of uncertainty and lack of information.[45] This study showed that the factors mentioned by the participants are bilateral. Therefore, it is suggested that the management policies of public volunteers in medical centers be considered in accordance with the plurality and ethnic diversity and the study of factions in Iran.

Also, the elites and managers with sufficient knowledge and information in the field of disasters should be incorporated. One of the important causal factors in this study was the lack of a centralized organization to decide on the volunteers' presence in disasters, which causes the formation of a central phenomenon- or class-orientation. According to the participants, there is no specific authority to decide on disasters. According to resources, in the Iranian Disaster Management Law, passed by the Islamic Council in 2008 and amended in 2017, volunteers' role in disasters has not been mentioned,[25] while most developed countries have

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adopted laws on volunteers' cooperation.[41] By way of example, in the United States, there is the Volunteer Protection Act.[42] Furthermore, in countries such as Australia, Canada, China, Finland, Germany, Ireland, the United States and the United Kingdom, the Good Samaritan International Code has been adopted, which reduces the liability of volunteers who rush to the rescue of injured persons and protect them against the possible damages that they may inflict on the injured.[41] Nevertheless, although these laws have been enacted and enforced in the United States, there are still gaps and challenges in the legal recruitment, employment, and use of volunteers in disasters.[46] In Iran, due to the contradictions in the law on disaster management, no trustees have been appointed in this section, and each institution, according to these laws, considers itself in charge of disaster coordination.[44,47] Therefore, a unified and centralized managing unit is suggested to be established to decide on the rules and protocols of volunteers in the disaster response phase of hospitals.

Another causal factor in the present research is ignoring lessons learned from disasters. Iranian managers seem to have never reviewed and shared the experience gained from past disasters, thereby repeating the same mistakes in disaster management. A study in the United States showed that most libraries have a wide range of books containing lessons learned from past disasters to be used to boost disaster preparedness, but they are never used in practice.[46] Another study in Iran showed that one of the reasons for the ineffectiveness of disaster activities is ignoring the lessons learned.[45] Japan is one of the countries that make good use of the lessons drawn from disasters.[48] In general, these studies showed that the lessons learned from the past are kept in libraries and archives in several countries, such as Iran, and are not used or written down. Therefore, it is suggested that disaster education lessons are prepared in black and white within easy access by hospitals along with various programs and scenarios on the presence of public volunteers in hospital disaster preparedness and response.

One of the intervening factors that influenced the main phenomenon in this study was the disloyalty of public volunteers in disasters. According to the participants, the weak relations with the volunteers and the lack of safety and liability insurance as well as having a bad experience of previous partnerships can be considered as factors leading to volunteers' disloyalty. Other factors include work and family worries. In addition, due to the fact that volunteers are not paid, there is always the threat of leaving the mission without prior notice. A study conducted in Finland found volunteer problems such as language barriers, poor interaction with nurses, organizational problems, and insufficient information, affect their loyalty.[49] Studies in the United States have also showed that motivating volunteers is an important part of the Management Program for Retaining Volunteers in Disasters,[50,51] and that maintaining the safety and well-being of volunteers is effective in retaining them.[52,53] Previous experience of events,[54,55] experiences of previous social participation, religiosity,[54] self-confidence and well-being, education,[56] and volunteers' age will have a greater impact on their loyalty.[57] In line with this study, the findings of recent studies showed that to be more loyal, volunteers should materially and spiritually be motivated and supported.

Another notable intervening factor accelerating the process of volunteers' effective presence in the response phase is their unfamiliarity with the area. According to the participants, if the volunteers are familiar with the culture and environment of the affected area, they will have a better relationship with the medical staff and patients and provide better services. A study in the United States showed that educating indigenous people is an important indicator[58] that improves volunteer retention.[59] Another study in the Nordic countries found that educating volunteers about the culture of cooperation and indigenous culture could lead to greater self-confidence and higher quality of volunteer work.[60] Meanwhile, volunteers with multiple cultures and languages could strengthen and enrich the group's goals.[61] As a result, it was observed that, in the absence of training and familiarity with the culture of the region, the presence of volunteers poses a threat. It is strongly recommended that managers use native volunteers in each area and neighborhood to speed up their presence.

Weak volunteering culture was one of the important contextual factors affecting the main axis of the research on the presence of public volunteers in the hospital response phase. Based on the participants' experiences, cultural weakness caused chaos and disorder in the presence of volunteers in disasters. Findings of a study in the United States showed that the spread of volunteering culture in the world and volunteers' full presence without financial and material prospects have no doubt a great impact on the social and economic spheres.[62] A study conducted in Iran also concluded that the lack of institutionalization of volunteer training in the country, cultural weakness of people in the society, and the lack of acceptance of volunteers at the managerial and executive levels, cause problems in the volunteering culture.[63] As the relationship between officials and the community improves, the level of trust in volunteers also increases.[64] The findings of the present study suggest that policy-makers and executives enhance the volunteering culture by improving the appropriate space and promoting public education at the school and university levels as well as advertising in national media.

One of the most important context factors of this study, namely preparedness programs, is merely a matter of formality and just on the paper. The very factor is the basis for the presence of public volunteers in the hospital response phase. According to the participants' experiences, hospital disaster preparedness programs should be understandable to all staff so that they know what to do in the event of a disaster, because opaque programs cause rework and errors. What every proper program seeks to do is to minimize the time it takes to care for the injured. In addition, hospital managers were response-oriented, taking response measures only after disasters occurred. Managers failed to focus on mitigation and preparedness actions. Research in the United States has shown that, despite the development of disaster preparedness programs, they are of little use in the event of a disaster.[65] They also pay little attention to volunteer management methods and plans.[66]

Los Angeles hospitals are fully prepared to deal with crises in terms of facilities and equipment. In practice, however, they have a low level of readiness, which is due to the weakness in preparing programs and holding coherent in-house training courses.[67] Moreover, studies conducted by Khankeh et al. in Iran showed that there is no proper program and preparation in hospitals for health-care providers to respond to disasters.[68] Without a plan, coordination is not possible and the disorder resulting from a disaster paves the way for further financial and personal damage. Furthermore, in the absence of plans, adapting to disaster conditions cannot be ensured.[69] The researcher found no correlation between the results of the present research that was carried out in Iran with those conducted in developed countries. Therefore, to stabilize and strengthen the preparedness of medical centers, preparation exercises are suggested to be carried out according to the written plans.

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Accepting any volunteers in the hospital was one of the most important factors of maladaptive coping techniques. According to the participants, it is impossible and ineffective to use unidentified and unassessed public volunteers in disasters. The selection process involves identifying volunteers who can do particular jobs within the organization. Volunteer selection can be based on criteria such as group needs, volunteer skills, interests, or ambitions, as well as specific task requirements. Intentional selection of appropriate volunteers to be responsible for jobs for which they are most suited is important. The recruitment process involves obtaining a volunteer's agreement to undertake tasks for the organization. The leader should envision volunteers who perform their jobs joyfully. In fact, 2 factors must be taken into account: 1 is suitably qualified volunteers and the other being the successful outcome of the project.[69] The larger the field in terms of the size of the organization and its demographic and geographical features, the greater the need to collect, produce, and send information.[70] The formation of specialized and rapid response teams, including rapid assessment teams and medical and health teams consisting of local volunteers has also been emphasized.[25,69,70] As a result, volunteers' enriched data are suggested to be used in case of creating a selection process that involves identifying volunteers in Iran through integrating registration systems and databases of volunteers.

One of the negative consequences of strategies in this study was the "crises over crises" challenge. (The term crisis is less commonly used in disasters.) According to the participants, when untrained public volunteers are present in disasters, it creates a bigger crisis. Apart from injuring themselves or the injured, they interfere with treatment. This challenge is called "crises over crises." This is due to the lack of coordination between the hospital staff and the public volunteers, as well as the excessive eagerness of the volunteers to help. As a result, providing routine medical care to hospitalized patients becomes a challenge in meeting the medical needs of the injured. In a study done in Iran, Bigdeli et al. concluded that there is no specific program for public volunteers in the disaster response phase.[70] Born et al. maintained that the nature of disasters is chaotic and service-oriented, and this can be alleviated through coherent planning.[71] Therefore, as a solution, it is suggested to prevent overcrowding in hospitals and, carrying out appropriate triage and evaluation of the injured.[72] This is possible with the presence of qualified, trained public volunteers as an auxiliary arm in the disaster response phase. It also promotes solidarity, social participation, hospital resilience and the proper management of disaster casualties.

Implications

The model developed in the current study can help the health policy-makers to better understand the main causes affecting the policy gap and inefficiency in Iran and other countries with similar contexts so that they can devise the necessary strategies. The results of this study can guide decision-making in upstream documents on the public volunteers.

Study Strength and Limitations

This study examined the presence of public volunteers in the hospital response phase during disasters, which has been less addressed in Iran and other parts of the world. Another contribution was the diversity of participants in the interviews, including all staff in various parts of the health-care system. The participants' experience and knowledge helped to saturate the data to explain all the concepts related to the hospital response phase in disasters. In qualitative studies, however, generalizability is not a goal. Yet, potential researchers can apply the findings of this study and the proposed model in different settings, depending on the specific context of the area and at different times. Meanwhile, this study focused on natural disasters based on the purpose; however, due to the COVID-19 pandemic and several interviews conducted in these conditions, in some cases, this issue was mentioned among the findings based on the participants' experiences. The research team believed that the volunteers' hospital response to emergencies and disasters was similar in many ways. One of the limitations of the study was the small number of articles related to the response of public volunteers to disasters in medical centers, which was overcome by widening the searching strategy and expanding the search timeline. Another limitation was the difficulty of coordinating interviews with several professors and officials in organizations due to their busy schedule. In the latter case, a large number of interviews were not possible during the COVID-19 pandemic in an in-person manner, and, as a result, the interviews were conducted by means of WhatsApp, Skype, or telephone.

Conclusions

The main purpose of this study was to explain the model of the presence of public volunteers in the hospital disaster response phase based on GT approach. According to the participants, the main focus of this study was the "policy gap and inefficiency" in decision-making and the development of laws and regulations for public volunteers in disasters. Several factors influenced the main phenomenon of the study. According to the findings of this study, in the operational field, policy-makers of the Iranian health system are suggested to establish an organization to decide and formulate laws for the presence of volunteers in disasters. In addition, they should study the ways of training public volunteers at different levels, ages, and cultures to determine the effectiveness of the provided trainings and to analyze the trainings with simulation methods. The findings of this study together with the proposed model can help potential researchers in other countries to pay attention to the core category and causal factors, contexts, and strategies and consequences of recalling and attracting public volunteers in response to disasters and then how these results deal with similar situations. This study also improves public health preparedness. The main recommendation of this study is that public volunteers' preparedness plans should be integrated into the disaster risk-reduction programs of the health system. In addition, the capacities created to use public volunteers should be used during the response phase and following up the volunteers' physical and mental health.

Data Availability. Data may be obtained from the authors upon request.

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Ethical standards. This study is part of a doctoral dissertation that was in 2020 at Urmia University of Medical Sciences. Conscious oral or written consent was obtained along with the signature of the interviewee from all participants. They were informed that the details of all participants and all data collected were confidential and that participants had the right to withdraw from the study at any time. This study was approved by the ethics committee of Urmia University of Medical Sciences, West Azarbaijan, Iran with the ethical code IR.UMSU.REC.1398.246.

References

1. **Safarpour H, Khorasani-Zavareh D.** The fourth epidemiological transition: the need for worldwide focus on reducing morbidity and mortality rates of disasters and emergencies. *Shiraz E-Med J.* 2019;20(9):e86746
2. **Alexander D.** *Natural Disasters*. Routledge; 2018.
3. **Hatakka I.** International Federation of Red Cross and Red Crescent Societies (IFRC) 2018 Observer Review report. 2019. Accessed March 16, 2022. https://oaarchive.arctic-council.org/handle/11374/2255
4. **World Health Organization**. Health emergency and disaster risk management framework. 2019. Accessed March 16, 2022. https://www.who.int/hac/techguidance/preparedness/health-emergency-and-disaster-risk-management-framework-eng.pdf
5. **Mami M.** Reflections on the Sendai Framework for disaster risk reduction: five years since its adoption. *Int J Disaster Risk Sci.* 2020;11(2):147-151.
6. **Bazyar J, Pourvakhshoori N, Safarpour H, *et al.*** Hospital disaster preparedness in Iran: a systematic review and meta-analysis. *Iran J Public Health.* 2020;49(5):837.
7. **Hosseini KA, Izadkhah YO.** From "earthquake and safety" school drills to "safe school-resilient communities": a continuous attempt for promoting community-based disaster risk management in Iran. *Int J Disaster Risk Reduct.* 2020;45:101512.
8. **Monavvarian A, Amiry M, Mehrikoli S.** Identification of effective components on increasing the survival rate of vulnerable and elderly weaved municipalities in the event of natural disasters (Case Study: Tehran). *Urban Manag Stud.* 2018;10(34):13-26.
9. **Seyedin H, Ryan J, Sedghi S.** Lessons learnt from the past and preparedness for the future: how a developing country copes with major incidents. *Emerg Med J.* 2011;28(10):887-891.
10. **Bayntun C, Rockenschaub G, Murray V.** Developing a health system approach to disaster management: a qualitative analysis of the core literature to complement the WHO Toolkit for assessing health-system capacity for crisis management. *PLoS Curr.* 2012;4:e5028b6037259a.
11. **Fiedrich F, Gehbauer F, Rickers U.** Optimized resource allocation for emergency response after earthquake disasters. *Saf Sci.* 2000;35(1-3):41-57.
12. **Ingrassia PL, Mangini M, Azzaretto M, *et al.*** Hospital disaster preparedness in Italy: a preliminary study utilizing the World Health Organization Hospital Emergency Response Evaluation Toolkit. *Minerva Anestesiol.* 2016;82(12):1259-1266.
13. **Jahanghiri K, Sadighi J, Hedayati SP.** Community participation in confronting natural disasters in Sistan va Baluchestan, Iran: a situational analysis. *Payesh.* 2014;13(1):102-106.
14. **Aitsi-Selmi A, Egawa S, Sasaki H, *et al.*** The Sendai framework for disaster risk reduction: renewing the global commitment to people's resilience, health, and well-being. *Int J Disaster Risk Sci.* 2015;6(2):164-176.
15. **de la Poterie AT, Baudoin M-A.** From Yokohama to Sendai: approaches to participation in international disaster risk reduction frameworks. *Int J Disaster Risk Sci.* 2015;6(2):128-139.
16. **Wannous C, Velasquez G.** *United Nations Office for Disaster Risk Reduction (UNISDR)—UNISDR'S Contribution to Science and Technology for Disaster Risk Reduction and the Role of the International Consortium on Landslides (ICL)*. Springer; 2017:109-115.
17. **Safarpour H.** Donors management in disasters: Kermanshah earthquake experience. *Iran Red Crescent Med J.* 2018;20(11):e84942.
18. **Cross IFoR, Societies RC.** World Disasters Report: Focus on early warning, early action. 2009. Red Cross Red Crescent; 2009.
19. **Andam R, Montazeri A, Faizi S.** The investigation of the role of satisfaction in predicting volunteer commitment in sport. *J Sport Manag.* 2014;5(4):29-45.
20. **Bernard A.** The role of hospital volunteers in disaster planning and response. *Prehosp Disaster Med.* 2017;32(S1):S73.
21. **Cliff BJ, Morlock L, Curtis AB.** Is there an association between risk perception and disaster preparedness in rural US hospitals? *Prehosp Disaster Med.* 2009;24(6):512-517.
22. **Ocak T, Duran A, Ozdes T, *et al.*** Problems encountered by volunteers assisting the relief efforts in Van, Turkey and the surrounding earthquake area. *Acad Emerg Med.* 2013;2013(12):66-70.
23. **Adib M, Nakhsaz M.** Organizing relief, health and therapeutic forces in crisis. In International Congress on Health and Crisis Management in Disaster 2006.
24. **Farajollah F, Sadeghi Nikpei N, Alamdari S.** Identify effective factors to attract public volunteer groups for giving voluntarily services in Red Crescent society. *Q Sci J Rescue Relief.* 2009;1(2):39-53.
25. **Salmani I, Seyedin H, Ardalan A, *et al.*** Conceptual model of managing health care volunteers in disasters: a mixed method study. *BMC Health Serv Res.* 2019;19(1):241-250.
26. **Fernandez LS.** *Volunteer Management System Design and Analysis for Disaster Response and Recovery*. Citeseer; 2007.
27. **Liu Y-J.** A proposal for a spiritual care assessment toolkit for religious volunteers and volunteer service users. *J Relig Health.* 2014;53(5):1414-1426.
28. **Laverick S, Kazmi S, Ahktar S, *et al.*** Asian earthquake: report from the first volunteer British hospital team in Pakistan. *Emerg Med J.* 2007;24(8):543-546.
29. **Aminizadeh M, Sharifian E, Sheikhbardsiri H, *et al.*** Management of Volunteers of Sports. Culture Investigators Knowledge; 2018.
30. **Ahmadi SAA, Rasuli R, Ghatare AR.** Presenting a crisis management model with emphasis on human resources management system for hospitals of Tehran. *J Public Admin.* 2012;4(10):1-24.
31. **Cuny FC.** Principles of disaster management lesson 1: introduction. *Prehosp Disaster Med.* 1998;13(1):80-85.
32. **Croker RA.** An introduction to qualitative research. In *Qualitative Research in Applied Linguistics* (pp. 3-24). London: Palgrave Macmillan; 2009.
33. **Corbin JM.** The Corbin and Strauss chronic illness trajectory model: an update. *Sch Inq Nurs Pract.* 1998;12(1):33-41.
34. **Glaser BG.** Doing Grounded Theory: Issues and Discussions. Vol 254. Sociology Press Mill Valley; 1998.
35. **Corbin J, Strauss A.** *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. Sage; 2014.
36. **Arab M, Zeraati H, Akbari Haghighi F, *et al.*** A study on the executive managers' knowledge and performance, and their hospitals preparedness against earthquake events and their relationships at public hospitals (affiliated by Tehran University of Medical Sciences (TUMS) 2005-2006). *Research. J Health Admin*. 2009;11(34):7-14.
37. **Polit D, Beck C.** *Nursing Research: Principles and Methods*. Lipponcott: Williams and Wilkins. 2004;721
38. **Guba EG, Lincoln YS.** Competing paradigms in qualitative research. *Handb Qual Res.* 1994;2(163-194):105.

39. **Rolfe G.** Validity, trustworthiness and rigour: quality and the idea of qualitative research. *J Adv Nurs.* 2006;53(3):304-310.
40. **Corbin J, Strauss A, Strauss AL.** *Basics of Qualitative Research*. Sage; 2014.
41. **Gulam H, Devereux J.** A brief primer on Good Samaritan law for health care professionals. *Aust Health Rev.* 2007;31(3):478-482.
42. **Hodge JG Jr, Gable LA, Cálves SH.** Volunteer health professionals and emergencies: assessing and transforming the legal environment. *Biosecur Bioterror.* 2005;3(3):216-223.
43. **Sauer LM, Catlett C, Tosatto R, *et al.*** The utility of and risks associated with the use of spontaneous volunteers in disaster response: a survey. *Disaster Med Public Health Prep.* 2014;8(1):65-69.
44. **Mohebifar R, Tabibi SJ, Asefzadeh S.** Designing a structure of disaster management for Iran. *J Health Admin.* 2008;11(33):47-56.
45. **Abolghasemi H, Radfar MH, Khatami M, *et al.*** International medical response to a natural disaster: lessons learned from the Bam earthquake experience. *Prehosp Disaster Med.* 2006;21(3):141-147.
46. **Jaeger PT, Langa LA, McClure CR, *et al.*** The 2004 and 2005 Gulf Coast hurricanes: evolving roles and lessons learned for public libraries in disaster preparedness and community services. *Public Library Q.* 2007;25(3-4): 199-214.
47. **Safarpour H, Fooladlou S, Safi-Keykaleh M, *et al.*** Challenges and barriers of humanitarian aid management in 2017 Kermanshah earthquake: a qualitative study. *BMC Public Health.* 2020;20(1):563. doi: 10.1186/s12889-020-08722-5
48. **Mirzaei J.** Comparative study of disaster management structure in Iran, Japan, India and Turkey. *Strateg Stud Public Policy.* 2018;7(25): 245-289.
49. **Jolkkonen S, Owusu-Afriyie E.** *An evaluation of a group of nursing students' volunteering project in a nursing home, Jyväskylä Finland.* Thesis. Jyväskylä University of Applied Sciences; 2014.
50. **American Hospital Association**. Emergency system for advanced registration of volunteer health care personnel–Hospital implementation issues and solutions focus group meeting report. Retrieved December 2005;31:2007. http//www.hrsa.gov/esarvhp/focusgroupreport0705/default.htm
51. **Merchant RM, Leigh JE, Lurie N.** Health care volunteers and disaster response—first, be prepared. *N Engl J Med.* 2010;362(10):872-873.
52. **Rogers SE, Rogers CM, Boyd KD.** Challenges and opportunities in healthcare volunteer management: insights from volunteer administrators. *Hosp Topics.* 2013;91(2):43-51.
53. **Liu C, Robinson P.** Better organisation of volunteers in disaster settings is needed: lessons for all from China. *Aust N Z J Public Health.* 2013; 37(6):595-596.
54. **Perks T, Haan M.** Youth religious involvement and adult community participation: do levels of youth religious involvement matter? *Nonprofit Volunt Sector Q.* 2011;40(1):107-129.
55. **Mileti DS, O'Brien PW.** *Public Response to the Loma Prieta Earthquake Emergency and Aftershock Warnings: Findings and Lessons.* Hazards Assessment Laboratory and Department of Sociology, Colorado State University; 1991.
56. **Thoits PA.** Role-identity salience, purpose and meaning in life, and well-being among volunteers. *Soc Psychol Q.* 2012;75(4):360-384.
57. **Li Y, Ferraro KF.** Volunteering in middle and later life: is health a benefit, barrier or both? *Social Forces.* 2006;85(1):497-519.
58. **Friedman FD.** Public relations in disaster management and planning for emergency physicians. *J Emerg Med.* 1995;13(5):661-668.
59. **Van Winkle R, Busler S, Bowman S, *et al.*** Adult volunteer development: addressing the effectiveness of training new 4-H leaders. *J Ext.* 2002; 40(6):1-8.
60. **Bjerneld M, Lindmark G, McSpadden LA, *et al.*** Motivations, concerns, and expectations of Scandinavian health professionals volunteering for humanitarian assignments. *Disaster Manag Response.* 2006; 4(2):49-58.
61. **Abplanalp P.** Voluntary service-Volunteer Management Cycle. *Int Rev Red Cross Arch.* 1994;34(300):302-304.
62. **Rak EC, Spencer L.** Community participation of persons with disabilities: volunteering, donations and involvement in groups and organisations. *Disabil Rehabil.* 2016;38(17):1705-1715.
63. **Esfandiar H.** The importance and role of volunteers in achieving sustainable development with emphasis on Red Crescent Society of Iran: (opportunities & Threats). *Sci J Rescue Relief.* 2013;4(4):57-69.
64. **Haraoka T, Ojima T, Murata C, *et al.*** Factors influencing collaborative activities between non-professional disaster volunteers and victims of earthquake disasters. *PLoS One.* 2012;7(10):e47203.
65. **Matusow H, Benoit E, Elliott L, *et al.*** Challenges to opioid treatment programs after Hurricane Sandy: patient and provider perspectives on preparation, impact, and recovery. *Subst Use Misuse.* 2018;53(2): 206-219.
66. **Miller LE, Powell GN, Seltzer J.** Determinants of turnover among volunteers. *Hum Relat.* 1990;43(9):901-917.
67. **Kaji AH, Lewis RJ.** Hospital disaster preparedness in Los Angeles county. *Acad Emerg Med.* 2006;13(11):1198-1203.
68. **Khankeh HR, Fallahi M, Ranjbar M, *et al.*** Health management in disasters with focusing on rehabilitation. *Arch Rehabil.* 2008;9(2):66-72.
69. **Khankeh H.** *Hospital Preparedness in Accidents and Disasters Country Program.* University of Social Welfare and Rehabilitation Sciences; 2012.
70. **Bigdeli M, Khorasani-Zavareh D, Mohammadi R.** Pre-hospital care time intervals among victims of road traffic injuries in Iran. A cross-sectional study. *BMC Public Health.* 2010;10(1):406.
71. **Born CT, Briggs SM, Ciraulo DL, *et al.*** Disasters and mass casualties: I. General principles of response and management. *J Am Acad Orthop Surg.* 2007;15(7):388-396.
72. **Burkle FM.** Mass casualty management of a large-scale bioterrorist event: an epidemiological approach that shapes triage decisions. *Emerg Med Clin.* 2002;20(2):409-436.

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