

Iranian Military Forces in the Bam Earthquake

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The earthquake that struck Bam, Iran, in December 2003 was one of the most catastrophic natural disasters in recent years. Medical and assistance activities conducted by Iranian military forces in this event are discussed in light of the special capabilities of the military forces in search and rescue missions. Among the most significant activities of the Iranian military forces in this event are the following: reporting the first news about the event, starting search and rescue missions in the first hour after the disaster by the 1st Brigade of Bam as the first assisting force, setting up two field hospitals as the first Iranian field hospitals in the disaster area, transporting 937 assistance, medical, and health care personnel to the disaster area in the first day, setting up 23 field emergency and 13 field assistance centers in the area, running 8 post-hospital care centers throughout the country, and playing a significant role in airlifting 11,792 casualties to different hospitals around the country. Based on the recent experience and the exclusive abilities of military forces, a special role for these forces in search and rescue missions should be considered.

Introduction

The 6.6-magnitude Bam earthquake, one of the most catastrophic natural disasters in recent years, left more than 40,000 people dead.^{1,2} The seismic features of Iran and similar events (such as the Guilan Earthquake with more than 40,000 fatalities³) in the past necessitate developing an exact disaster mitigation strategy. Programming a disaster response plan is an important component of such a strategy. Defining the exact role of different organizations could maximize the effectiveness of the plan.

People affected by disaster frequently require immediate medical care, food, water, shelter, and security. Such a response dictates a massive requirement for material, equipment, and personnel. In other studies, the utilization of military forces has been mentioned as an attractive solution to a wide variety of problems secondary to a natural disaster.^{4,5} The importance of a rapid response makes the military forces the best organization for complex humanitarian emergencies.⁶⁻⁸ These forces are trained to work as a team with discipline in austere conditions and can provide their own transportation, communications, shelter, food, water, sanitation, and security.^{7,9} This ability is typical of military forces, whereas many relief organizations often have serious problems providing similar logistical support for their personnel.¹⁰

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We review relief activities of Iranian military forces in response to the Bam earthquake in light of their special capabilities.

Disaster Dimensions

Bam is located in Kerman Province, 620 miles southeast of Tehran. The population of Bam was approximately 100,000, which increases to more than 200,000 when the surrounding areas are included. Bam's well-known 2,000-year-old historical citadel of Arg-e-Bam was destroyed by the earthquake that struck Bam on December 26, 2003. Arg-e Bam is the largest mud-brick structure in the world. Although there are several faults in the area, the Bam fault is nearest to the city. The recent earthquake occurred as the result of a right lateral slip movement of the Bam fault.¹

This earthquake of 6.6 magnitude (Richter Scale) struck at 5:28 a.m. local time on December 26, 2003. The death toll was more than 40,000, with approximately 30,000 injured² and more than 100,000 homeless. Two hospitals collapsed, and the remaining hospitals were strained to care for the thousands injured. Electricity and telephone service were knocked out.^{1,2,11}

As shown in Table I, this earthquake was one of the most catastrophic events in recent years worldwide.^{2,3}

Iranian Military Forces in the Bam Earthquake

To clarify the actions taken by the Iranian military forces in different phases of the relief mission in this disaster, we categorized them into three groups as follows: (1) emergency operations on the first day (regarding the importance of a rapid response in emergency situations, all operations done by Iranian military forces during the first 24 hours after the earthquake are discussed below); (2) medical operations over the following days (providing medical and health care personnel, distributing equipment and material to the affected area, providing high-level patient care in military hospitals and clinics, and establishing post-hospital care centers for convalescence); and (3) evacuation of casualties.

Emergency Operations on the First Day

Because in a massive earthquake with large numbers of casualties, the greatest demand for patient care occurs during the first 24 to 48 hours after the disaster,¹² one of the most important factors determining the success of a relief mission is how soon the relief mission is started. Observations made during earthquakes in Tangshan, China (1976), Campania-Irpinia, Italy (1980), and Armenia (1988) indicate that 85 to 95% of the victims who survived entrapment in damaged buildings were extricated within 24 hours.¹³⁻¹⁵ Immediate provision of emergency primary care could prevent a significant number of

TABLE I
MAJOR EARTHQUAKES IN THE PAST 20 YEARS
WITH >10,000 FATALITIES

| Fatalities | Magnitude (Richter Scale) | Year | Location |
|------------|---------------------------|------|----------|
| 40,000 | 6.6 | 2003 | Iran |
| 20,000 | 7.7 | 2001 | India |
| 17,000 | 7.6 | 1999 | Turkey |
| 40,000 | 7.7 | 1990 | Iran |
| 25,000 | 6.8 | 1988 | Armenia |

deaths.¹⁶ Available personnel, some degree of sustained presence of a military unit, organization, and discipline make military forces the best organization for rapid response.^{7,8,10} Two primary factors apply: use of local resources in the disaster area and transportation of required resources from outside the disaster area.

Use of Local Resources

The importance of local forces in relief missions in natural disasters cannot be overemphasized.^{17,18} Because military forces are present in all regions of the country, a rapid response by these forces is an attractive solution. Also, with regard to the fact that the usual communication facilities are unreliable in these situations, local military forces have a significant role in sending first reports to the responsible authorities.¹⁹ In the recent Bam earthquake, the first report was sent 35 minutes after the earthquake by the commander of the 1st Brigade of Bam. Complementary reports describing the situation and requesting help were sent by him 1 and 2 hours after the earthquake.²⁰

Forces of the 1st Brigade initiated the relief mission during the first hour after the disaster. By noon on the day of the earthquake, 2,000 entrapped people were extricated, and simultaneously the brigade clinic started to provide medical care to the casualties.²⁰

Transportation of Required Resources from Outside the Disaster Area

Assistance from outside the affected area usually will not arrive in sufficient quantity until 48 to 72 hours after the event.⁸ Nevertheless, transportation of a significant amount of resources within 24 hours after the disaster by Iranian military forces was considerable. The first assistance teams of Iranian military forces, transferred from outside the area, arrived in the disaster zone 2 hours after the disaster. Forces of different brigades of the Kerman Province arrived in the area before noon. The first Iranian field hospital was set up by Iranian military forces in the area on the first day. Military equipment and facilities are designed for rapid deployment, which enables military forces to provide resources faster than other organizations.¹⁰ By 11 p.m. on the day of the disaster, 937 medical-assistance personnel had been transferred to the area. Table II provides a summary of activities executed on the first day.

Medical Operations during Subsequent Days

Medical operations continued through the succeeding days. These operations included emergency primary care, health care operations, high-level treatment, and rehabilitation.

TABLE II
IRANIAN MILITARY OPERATIONS DURING THE FIRST DAY
AFTER THE DISASTER

| Operations | Time |
|---|-----------|
| Arrival of the first team in the zone | 7:30 a.m. |
| Beginning of assistance by military forces | 8 a.m. |
| Transport of 150 assistance-medical personnel to the zone | 11 a.m. |
| Transport of 50 assistance-medical personnel to the zone | Midnight |
| First Iranian field hospital set up in the zone | 1 p.m. |
| Transport of 24 self-sufficient assistance vans to the zone | 2 p.m. |
| Arrival of 102 ambulances, 8 field emergency stations, and 4 surgical teams in the zone | 5 p.m. |
| Transport of 20 ambulances to Tehran airport | 8 p.m. |

Providing emergency lifesaving care can decrease the mortality rate significantly.²¹ Of those who are injured and die slowly in a natural disaster, 25 to 50% could be saved if first aid is rendered immediately.¹⁶ Furthermore, many victims require only minimal care.²² On the other hand, more sophisticated health care operations should be the first priority 48 to 72 hours after the disaster.²³ A relief organization should be able to provide all necessary resources to support health care and medical needs in a natural disaster. Iranian military forces transported 185 assistance teams consisting of 1,286 assistance, health care, and medical personnel, including general physicians, specialists, public health officers, and primary care providers. This variety is a product of the predefined mix of health care and specialty personnel in the military forces. Furthermore, the ability of military forces to work as a team in austere conditions results in effective casualty care operations in disaster situations.

To provide required material and equipment, Iranian military forces set up 2 field hospitals, 23 field emergency stations, and 13 assistance stations and transported 49 tons of medications and health care and medical equipment to the disaster area. Other Iranian relief organizations and international teams set up several field hospitals in the zone.²⁴ On their arrival, these teams provided treatment of outpatient cases after the emergency phase. All medical units of military forces around the country were ordered to reallocate the use of hospital beds and admit more patients than usual. Around the country, Iranian military forces operated eight post-hospital convalescence centers, which had a turnover of 90 to 100 patients daily. Because of the medical-surgical specialty mix of the military forces, they are able to adequately staff such centers. In addition, security in these centers is an important requirement that is more readily addressed by military forces.¹⁰

Evacuation of Casualties

The inability of many civilian organizations to effectively provide sufficient resources in relief missions can be a significant problem. Military forces have extensive capabilities in this regard and can play a significant role in distributing resources in disaster zones.¹⁰ In addition to the logistical self-sufficiency of military forces, they can aid other organizations in transporting their resources.

In the Bam earthquake, Iranian military forces assumed the responsibility for transporting assistance and medical personnel of all other organizations to the disaster zone. More than 290 vans and 15 heavy cars were used to transport casualties. Airplanes and helicopters of the Iranian military forces played a significant role in airlifting 11,792 casualties during more than 682 hours of flying.

Conclusions

Although military defense of the country should always be considered as the primary duty of military forces, providing assistance for natural disaster victims is one of the main duties of these forces around the world. This is particularly true after the Cold War. Use of the special capabilities of the military forces in situations encountered in natural disasters provides a unique opportunity for these forces.

Moreover, the lack of a well-developed relief organization in developing countries makes the role of military forces even more significant. Because two of the five major earthquakes of the past 20 years have struck Iran, there is a serious need for a natural disaster response plan in this country. Based on the abilities of these military forces, a well-defined role should be considered for military forces in developing a natural disaster response plan.

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