

## Disaster Management - Some Issues Through Examples

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### Abstract

Disasters – both natural and man-made have been occurring all over the world, causing huge loss of lives, apart from economic losses. Disaster management involves organizing resources (including human resources) for dealing with the immediate needs when disaster occurs, including the humanitarian aspects, and the long-term management, which involves mitigation and rehabilitation. The lessons-learned in the wake of each disaster, after analysis of data collected, will help in planning for disaster preparedness. In this paper a few earthquake disasters, the recent tsunami of 2004 and the Uttarakhand cloudburst of 2013, and a couple of fire disasters have been discussed to illustrate the management principles involved in disasters. Besides, a special aspect of disasters, which is trauma, the mental shock faced by some victims has been discussed, to highlight the aspect of skill-development of personnel involved in disaster mitigation.

**Key Words & Phrases:** *Disaster management, trauma, preparedness & brain stem.*

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**Preamble:** The occurrences of disasters both natural and man-made are as old as the history of mankind. While efforts are being made all over the world to prevent disasters. Disasters do occur frequently in some part of the world or another, causing huge losses to human lives, apart from unbearable economic losses. The occurrence of a disaster calls for immediate attention through crisis management; it calls for a well – thought off plan on a large-scale, in the longer scale, in the longer time-frame, for redressed, rehabilitation and mitigation for those affected in the disaster. An attempt has been made in this presentation to study the principles of disaster management through a few cases of disaster management through a few cases

of disasters which occurred in India. Further, a brief description of how the human mind is affected due to the traumatic experience of the victims has also been discussed.

Definition of Disaster (W.H.O): A disaster is any event natural or man-caused, which creates an intense negative impact on people, goods and services, and/or the environment, and exceeds the affected community's internal capability to respond, prompting the need to seek outside assistance.

Disaster Management refers to the organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies,

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in particular preparedness, response and recovery in order to lessen the impact of disasters.

Preparedness refers to the activities prior to a disaster such as preparedness plans, emergency exercises and developing early warning systems. Response refers to the activities during the disaster such as warning announcement, emergency operations to save and rescue affected people, etc. The recovery activities that follow a disaster could be providing temporary shelter, medical assistance, food & clothing and such assistance.

Mitigation activities include collection of data and analysis to identify the causes of disaster and taking measures such as vulnerability analysis and prevention public education on both awareness and mutual help and cooperation with people and agencies dealing with the disaster. Rehabilitation measures are required in case of disasters where in habitats have seen destruction as a result of disaster. Hence the management of disaster is quite a challenge which involves immediate management of the crisis and a long – term action plan for recovery, mitigation, rehabilitation and prevention.

Hence disaster management involves dealing with and avoiding both natural and man-made disasters, preparedness to face the disaster and rebuilding and supporting the society after natural disasters.

Classification of disasters; Disasters are classified into natural and man-made disasters. Natural disasters are those which occur due to sudden changes in meteorological, topographical or environmental factors. Examples are cloud bursts, floods, earthquakes, tsunami, cyclones, volcano eruption etc. Man-made disaster occurs due to technological, industrial accidents, security – related, terrorism and such factors. Examples are gas leakages, oil-spills, fire accidents, vehicle crashes.

Since the disasters are of different, varied nature, there are a number of factors which affect the disasters. Factors such as age, immunization status, degree of mobility and emotional stability are amongst the host factors. There are many environmental factors such as psychological factors. There is a need to collect data on all such factors of each disaster that has occurred and subject them to careful analysis.

There are many characteristic features for any disaster which include predictability, controllability, and speed of onset, length of forewarning, duration, scope and intensity of impact.

Disaster management involves three phases – pre-impact, during impact and post – impact phases. The first phase involves the preparedness, the second phase involves managing the crisis in-situ and third phase involves rehabilitation and mitigation.

Principles of Disaster management: The stake holders in the onerous and stupendous task are those affected (the victims of disaster), the government and its related departments and the voluntary non-governmental organizations. All stake-holders are equally responsible in the management of disasters. Each person must be totally involved and discharge his/her assigned role. Co-ordination and cooperation of the human resources involved, and judicious use of available resources – particularly the resources in short-supply are very essential for the success of the management exercise. The first managerial function of planning should focus on large scale events. Coordinating amongst the different agencies during implementation and dealing with the requirements of the victims require handling of the several human factors mentioned earlier.

#### **Five phases of management of disaster:**

- i) Disaster preparedness should be in the form of money, manpower and materials, evaluation of risk, location of disaster prone areas, effective communication and spread of warning through awareness programs, etc.
- ii) Disaster Impact – involves to collect information and study the effects of the disaster
- iii) Disaster response involves immediate action such as shifting the victims to safer places meeting food and health needs, etc.
- iv) Rehabilitation Phase involves arrangement of water supply, food, basic sanitation, medical supply etc
- v) Mitigation phase – involves analysis of causes through extensive collection of data and evolving preventive measures, providing economic, health, shelter assistance through a long range plan, Mitigation complements the disaster preparedness and disaster response activities.

What are the effects of disaster? These involve handling particularly large-scale deaths, handling deformities and disabled people, spread of communicable diseases, psychological problems of victims affected by trauma, food shortage, socio-economic losses with local economy requiring years for recovery environmental disruption, etc. Recovery from the permanent damages takes a lot of time – sometime years.

Disasters, in particular, the natural disasters are unpredictable. They involve high risk and are vulnerable. Eg. Nearly 57% of the land area in India is earthquake prone, with 12% prone for severe earthquakes.

Hence preparedness to face disaster is the best measure to face disasters. Hence most countries have established agencies for disaster management with trained personnel.

### Some Examples of Disasters in India

1. Koyna Earthquake which occurred on December 11, 1963. The quake had a magnitude of 6.3, with a death toll of about 200.
2. The earthquake which occurred in Killari in Maharashtra on 30th September 1993 which measured 6.4 on Richter and had 7928 dead.



3. The Bhuj Earthquake in Gujarat on 26th January 2001 was one of the severest which shook the earth in the recent past with a high magnitude. This quake killed 19,727 people with 1,66,000 injured and over 3 million people affected.



4. The Deadliest Tsunami in history occurred on 26th Dec. 2004, in the Indian ocean with a magnitude of 9.0, causing waves of over 15 meters height in the Indian ocean, resulting in a rupture of 1000 km length in the tectonic plates. Tsunami traveled a distance of 5000 km up to Africa, affecting 11 countries, leaving 150,000 people dead. The Tamilnadu coast affected in India took years for rehabilitation. Many NGO's including the Mysore citizens forum were involved in the rehabilitation work.





5. Cloud burst and floods in Uttarakhand which happened on 16th June 2013 was one of the largest ecological tragedies. To quote a report – “when clouds burst over the sacred mountains, even Gods could not protect them.” The floods ravaged the entire Kedarnath valley wiping out many villages, including the pilgrim town of Kedarnath. Death toll over 1000 was reported and the economic loss was estimated at 12,000 crores. Most challenging rescue operations were carried out by the defence forces. The cause of the disaster was attributed to construction of dams and diversion of 60-70% of water flowing in rivers in the valley.



**Now let us look at a few man made disasters:**

6. The Gory Fire mishap that occurred at Mysore on 8th Feb., 1989 in the floor of a film studio, while shooting a tele-serial resulted in the death of 50 people and left 40-50 injured. The cause was attributed to bursting of flower pot crackers, and blocking of main exists by studio equipment. It took a long 20 year legal battle in court for victims to receive compensation.



7. Fire at AMRI Hospital in Kolkata on December 9, 2011 caused death of 89 and left 67 injured. Cause was attributed to using the basement of the seven-floor structure as a storehouse with combustible substances like beds and switching-off of the fire alarm system, which resulted in the choking to death of the victims on the upper-floors.



## Trauma During Disasters

On experiencing life-threatening situations during disasters, many victims suffer from mental shocks, which linger in their minds, even after recovery. In fact some victims, with weak minds do not recover totally. This section provides a brief note on how such things happen and how the victims are to be handled.

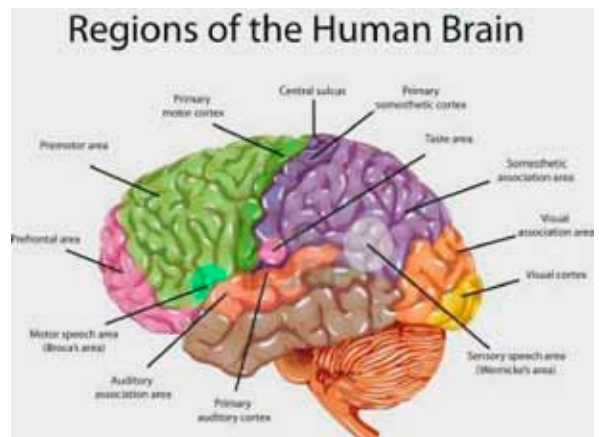
Trauma is defined as a deeply distressing of life threatening experience. Psychological trauma is a type of damage to the psyche that covers as a result of a severely distressing event. Traumatic experiences shake the very foundations of our beliefs about safety.

Most victims during any disaster experience a trauma. Victims take time to recover from this state of mind. There is hence a need for raising the morale of the victims. This calls for people endowed with skills to handle and counsel trauma-affected victims.

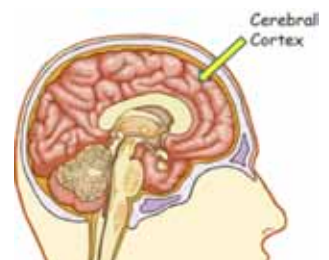
To understand the state of mind during trauma one should know how the human brain functions.

## Human Brain

Composed of two hemisphere, the human brain, which has a very complex structure, weighs about 1.5 kgs. The live brain gives the feel of the consistency of a tooth paste. The two hemispheres are connected by a band of fibers called corpus callosum. The hemispheres contain uncountable number of cells called neurons, which are responsible for the action of the brain. These neurons have complex chemical structure which can change and also handle electrical pulses. The left hemisphere of the brain controls the right part of the body and vice-versa. The right hemisphere tends to excel at non-verbal, spatial tasks: it helps with things like awareness, sociability, intuition, holistic thinking, estimation, intonation of speech, and visual memories, among other things. The left hemisphere excels in language and verbal and logical tasks, including things like writing and speaking, calculating, analyzing, tending to grammar and literal meaning of speech and thinking linearly.



**CORTEX:** The covering over the hemispheres looks like a wrinkled blanket, with folds and undulations called Sulci (grooves) and gyri (bumps). This covering is called cortex. The cortex



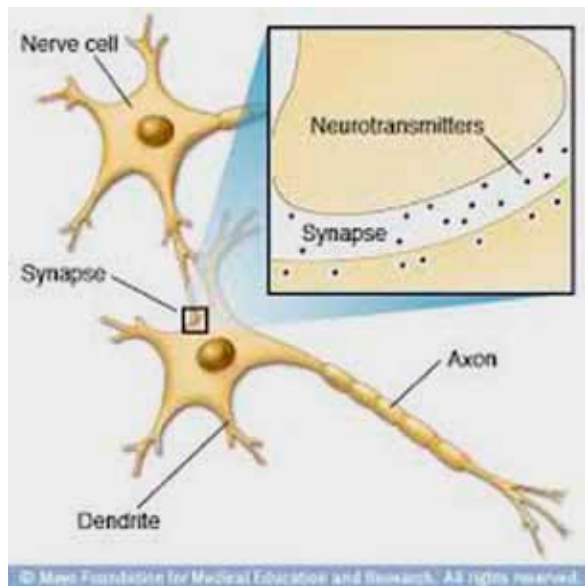
is six layers thick and packed with nerve cells called neurons, which account for the grey appearance of the cortex. The cortex is wrinkled to provide extra space to accommodate the large number of neurons.

**CEREBELLUM:** is another part of the brain in the back of the brain, tucked underneath the cortex. Cerebellum has striated tissues, which looks more like muscle. It has more neurons than any other part of the brain, and it supports motor and mental dexterity. Cerebellum receives enormous information from other parts of brain through cortex and sorts and processes the information received by it.

**BRAIN STEM:** This is located in the middle of the base of the brain, and connects the brain to the spinal cord. Functions of brain stem include automatic functions like breathing, the beating of the heart and blood pressure functions of brain stem are absolutely necessary to sustain life.

### ***How The Brain Communicates?***

The brain is packed with neurons, about 100 billion. Each neuron is a self – contained functioning unit. The three basic parts of a neuron are – the cell body, the dendrites, which receive incoming information and the axon, which sends outgoing information. The communication occurs through complex chemical changes and electricity.



### ***What Happens During Trauma?***

The communication mechanism in the brain comes to a stand-still. Sometimes there will be permanent damage if neurons are damaged. If there is no damage to the cells, patient can recover, but recovery takes time.

Damage to the psyche due to trauma can be cured, (because it is not physical damage) but it takes time. Duration depends on extent of damage and the patient.

Providing help for such patients for recovery from trauma requires special skills and special training by experts.

### **Conclusion:**

Disasters create physical damage as well as intra-personal effects. The time has come to recognize the need for recovery that would lead to quick revival. Fear and anxiety are to be removed for turning around to normalcy. Traumatic effects destroy human lives.

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