

SYBBA (Semester- IV)

Subject: Disaster Management (UM04SBBA72)

Unit 1 Overview of Disaster Management

Definition and Nature of Disaster

Definition of Disaster:

A disaster is a non-routine event that exceeds the capacity of the affected area to respond to it in such a way as to save lives; to preserve property; and to maintain the social, ecological, economic, and political stability of the affected region.

This definition of disaster includes the following:

- (1) It eliminates from consideration such routine emergencies as house or apartment fires, and motor vehicle accidents. Disasters are unusual events, complex and difficult to respond to, and their impacts may last for generations. By defining them as non-routine it excludes events that even though they might involve death and destruction, can be handled by simple operating procedures.
- (2) It takes into consideration the capacity of the local area to respond to an incident. This is important because, in most cases, large communities, simply because of the number of their available resources, are more capable of handling very serious situations than are small communities.
- (3) It takes into consideration the importance of maintaining the social, ecological, economic, and political stability of the affected area. This is important because, clearly, when people are killed and homes are destroyed, those who survive will suffer long-lasting emotional and psychological effects. Property damage results in both direct (e.g., property loss) and indirect (e.g., job loss) economic consequences. Oil spills and tsunamis can destroy shellfish habitat and other areas of ecological significance. Incoming personnel from higher levels of government and national and international agencies may disrupt local decision-making processes, and terrorist operations may increase political instability.

A disaster is a serious problem occurring over a short or long period of time that causes widespread human, material, economic or environmental loss which exceeds the ability of the affected community or society to cope using its own resources. Disasters are routinely divided into either "natural disasters" caused by natural hazards or "human-instigated disasters" caused from anthropogenic hazards. However, in modern times, the divide between natural, human-made and human-accelerated disasters is difficult to draw.

Examples of natural hazards include avalanches, flooding, cold waves and heat waves, droughts, earthquakes, cyclones, landslides, lightning, tsunamis, volcanic activity, wildfires, and winter precipitation. Examples of anthropogenic hazards include criminality, civil disorder, terrorism, war, industrial hazards, engineering hazards, power outages, fire, hazards caused by transportation, and environmental hazards.

Developing countries suffer the greatest costs when a disaster hits – more than 95% of all deaths caused by hazards occur in developing countries, and losses due to natural hazards are 20 times greater (as a percentage of gross domestic product) in developing countries than in industrialized countries.

Characteristics of Disasters:

Many of those who choose not to define a disaster by its origin/cause define it according to its characteristics. These may include: (1) length of forewarning, (2) magnitude of impact, (3) scope of impact, and (4) duration of impact. Disaster researchers generally agree that a disaster affects people and that it is often catalogued in terms of the number of dead and injured. However, others have expanded the definition to reflect major losses to both population and physical structures – losses that disrupt the social structure and essential functioning of a community. The problem with focusing on community disruption as a way of defining disaster is reflected in situations such as that of Lauda Flight 004, which, carrying 213 passengers, crashed in a remote jungle site in Thailand in 1991.

In the developed world, the impact of disasters is often more readily evident in their psycho-social and politico-economic impacts than in their mortality rates. But, because the impact of a disaster can be both unexpected and extremely varied, it is extremely difficult to include all potential impacts within any single definition.

Disasters have six characteristics that differentiate them from emergencies: (1) degree of uncertainty, (2) urgency, (3) development of an emergency consensus, (4) expansion of the citizenship role, (5) convergence (i.e., the sudden influx of people and material upon a disaster scene), and (6) de-emphasis of contractual and impersonal relationships.

Significance of Disaster Management:

As technology has improved, many disasters that, twenty or even ten years ago, would have been unexpected events can now be forecast with some accuracy. For example, Hurricane Andrew was forecast ahead of time and thousands of people were able to evacuate prior to its arrival, but 9/11 is an event of sudden calamity, causing disruption in normal routing and causing a lot of destruction depending upon the intensity of the disaster. The effects of disasters in the concerned areas are: it completely disrupts the normal day to day life; causes a lot of loss in terms of life and property; leads to a loss of agriculture, animal life as well; hampers developmental projects in an adverse manner; causes destruction to the state of art and infrastructure; negatively influences the emergency systems; normal needs and processes like flood, shelter, health etc. are affected and deteriorate depending on the intensity and severity of the disaster. Disasters are inevitable; there is no country that is immune from disaster, though vulnerability to disaster varies. Disasters are of two types— Natural and man-made disasters. Based on the devastation caused and intensity, it may be major/ minor disasters. Natural disasters are generally unpredictable and the destruction caused by these depends upon the intensity of disasters. These disasters include floods, hurricanes, earthquakes, and volcanic eruptions that can have immediate impacts on human health as well as secondary impacts causing further death and suffering from floods causing

landslides, earthquakes resulting in fires, tsunamis causing widespread flooding and typhoons sinking ferries. Majorly the cause of these disasters is the change in climate as well as the movement inside the earth like moving tectonic plates or lava. The events of the high-intensity earthquake, floods, cyclone, flash floods, some major landslides and event of drought are said to be major natural disasters. These disasters generally cause a high loss of life and property and also lead to displacement of a lot of people from their shelters. On the other hand, cold waves, heavy rains causing disruption in normal life, heat waves, thunderstorms, mudslides, some minor landslides and low intensity earthquakes can be a few cases of minor natural disasters. Disasters taking place due to human activities and human negligence and can lead to a lot of destruction in terms of life and properties are man-made disasters. Events of forest fires, wars, nuclear attack, major fires, industrial accidents as well as the event of building collapsing or accidents at construction sites causing a lot of loss and damage are the major man-made disasters. Events of train or road accidents, minor household fire, food poisoning, minor industrial accidents, looting, terrorist attacks or of a fire at shops etc. resulting mostly out of personal negligence are termed as minor man-made accidents/ disasters. These do not lead to a high loss of life though the loss of property may be evident in such cases

Disaster preparedness or management activities are aimed to minimise loss of life and damage in the event of a disaster. Disaster management forces can help by removing people and property from a threatened location and by facilitating timely and effective rescue, relief and rehabilitation at the place of disaster. Preparedness is the only way of reducing the impact of disasters as most of the disasters are unpredictable and even if predicted, there is not much time to act. Community-based preparedness and management should be a high priority in physical therapy practice management. Also, it should be the main agenda of the government to appoint a proper department dealing with disaster management and preparedness. The local authorities should be empowered to act as soon as possible in the event of a disaster. It may take time to get relief and rescue operations to start so in the meantime, it is the role of local civic bodies' disaster management team to provide rescue work as soon as disaster strikes then relief and rehabilitation should follow. Disasters are events that have a huge impact on humans and the environment. Disasters are inevitable; we cannot do anything to prevent these but disaster preparedness is only in our hands. Disaster management requires government intervention and proper planning as well as funding. It is not necessary that these disasters are always unpredictable. Disasters are inevitable although we do not always know when and where they will happen. But their worst effect can be partially or completely prevented by preparation, early warning and swift, decisive responses. Disaster management aims to reduce the occurrence of disasters and to reduce the impact of those that cannot be prevented. Disaster management forces come into action as soon as a disaster strikes and help out in the relief, rescue and rehabilitation process. Disasters can happen at anytime and anyplace: their human and financial consequences are hard to predict so preparedness is the only solution. Warning. Uncertainty and duration may bear little relationship to amount of damage.

Concept of Hazard, Risk and Vulnerability:

Emergency: “Is a situation generated by the real or imminent occurrence of an event that requires immediate attention” (key words)

Paying immediate attention to an event or situation as described above is important as the event/situation can generate negative consequences and escalate into an emergency. The purpose of planning is to minimize those consequences.

Risk: “Is the probability that loss will occur as the result of an adverse event, given the hazard and the vulnerability”

Risk management: Consists of identifying threats (hazards likely to occur), determining their probability of occurrence, estimating what the impact of the threat might be to the communities at risk, determining measures that can reduce the risk, and taking action to reduce the threat.

Risk (R) can be determined as a product of hazard (H) and vulnerability (V). i.e. $R = H \times V$

Vulnerability: “is the extent to which a community’s structure, services or environment is likely to be damaged or disrupted by the impact of a hazard”

Vulnerability: A condition wherein human settlements, buildings, agriculture, or human health are exposed to a disaster by virtue of their construction or proximity to hazardous terrain.

Distinguishing between an emergency and a disaster situation

An emergency and a disaster are two different situations:

An emergency is a situation in which the community is capable of coping. It is a situation generated by the real or imminent occurrence of an event that requires immediate attention and that requires immediate attention of emergency resources.

A disaster is a situation in which the community is incapable of coping. It is a natural or human-caused event which causes intense negative impacts on people, goods, services and/or the environment, exceeding the affected community’s capability to respond; therefore the community seeks the assistance of government and international agencies.

Types of Disasters

Disasters are routinely divided into natural or human-made. However, in modern times, the divide between natural, man-made and man-accelerated disasters is quite difficult to draw.

Complex disasters, where there is no single root cause, are more common in developing countries. A specific disaster may spawn a secondary disaster that increases the impact. A classic example is an earthquake that causes a tsunami, resulting in coastal flooding, resulting in damage to a nuclear power plant (such as the Fukushima nuclear disaster). Some manufactured disasters have been wrongly ascribed to nature, such as smog and acid rain.

Some researchers also differentiate between recurring events, such as seasonal flooding, and those considered unpredictable.

1. Natural disasters (caused by natural hazards)

A natural disaster is "the negative impact following an actual occurrence of natural hazard in the event that it significantly harms a community". A natural disaster can cause loss of life or damage property, and typically leaves some economic damage in its wake. The severity of the damage depends on the affected population's resilience and on the infrastructure available. Examples of natural hazards include: avalanche, coastal flooding, cold wave, drought, earthquake, hail, heat wave, hurricane (tropical cyclone), ice storm, landslide, lightning, riverine flooding, strong wind, tornado, typhoon, tsunami, volcanic activity, wildfire, winter weather.

Natural disasters can be aggravated by inadequate building norms, marginalization of people, inequities, overexploitation of resources, extreme urban sprawl and climate change. The rapid growth of the world's population and its increased concentration often in hazardous environments has escalated both the frequency and severity of disasters. With the tropical climate and unstable landforms, coupled with deforestation, unplanned growth proliferation, non-engineered constructions make the disaster-prone areas more vulnerable. Developing countries suffer more or less chronically from natural disasters due to ineffective communication combined with insufficient budgetary allocation for disaster prevention and management.

2. Non- natural (Human made) disasters (caused by anthropogenic hazards)

Airplane crashes and terrorist attacks are examples of man-made disasters: they cause pollution, kill people, and damage property. This example is of the September 11 attacks in 2001 at the World Trade Center in New York City.

Human-instigated disasters are the consequence of technological or human hazards. Examples include war, social unrest, stampedes, fires, transport accidents, industrial accidents, conflicts, oil spills, terrorist attacks, and nuclear explosions/nuclear radiation. Other types of induced disasters include the more cosmic scenarios of catastrophic climate change, nuclear war, and bioterrorism. One opinion argues that all disasters can be seen as human-made, due to human failure to introduce appropriate emergency management measures.

Famines may be caused locally by drought, flood, fire, or pestilence, but in modern times there is plenty of food globally, and sustained localized shortages are generally due to government mismanagement, violent conflict, or an economic system that does not distribute food where needed. Earthquakes are mainly hazardous because of human-created buildings and dams; avoiding earthquake-generated tsunamis and landslides is largely a matter of location.

Disaster Management Cycle

Disaster management is a cyclical process; the end of one phase is the beginning of another (see diagram below), although one phase of the cycle does not necessarily have to be completed in order for the next to take place. Often several phases are taking place concurrently. Timely decision making during each phase results in greater preparedness, better warnings, reduced vulnerability and/or the prevention of future disasters. The complete disaster management cycle includes the shaping of public policies and plans that either addresses the causes of disasters or mitigates their effects on people, property, and infrastructure.

The mitigation and preparedness phases occur as improvements are made in anticipation of an event. By embracing development, a community's ability to mitigate against and prepare for a disaster is improved. As the event unfolds, disaster managers become involved in the immediate response and long-term recovery phases.

The diagram below shows the Disaster Management Cycle.



Disaster Management Cycle

Mitigation: Measures put in place to minimize the results from a disaster. Examples: building codes and zoning; vulnerability analyses; public education.

Preparedness: Planning how to respond. Examples: preparedness plans; emergency exercises/training; warning systems.

Response: Initial actions taken as the event takes place. It involves efforts to minimize the hazards created by a disaster. Examples: evacuation; search and rescue; emergency relief.

Recovery: Returning the community to normal. Ideally, the affected area should be put in a condition equal to or better than it was before the disaster took place. Examples: temporary housing; grants; medical care.