

ROLE OF MEDICAL PROFESSION IN DISASTER MANAGEMENT

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ABSTRACT

Disaster has significance and repercussions in global, national and legal terms. It retards the development process not only in the affected area, region but extend in neighboring regions or country as well. In global terms disaster have serious repercussion in future. The world is already facing a range of environmental and substantial crisis, as medical and paramedical services provider it is our prime duty to manage with the best possible outcome the unwanted circumstances arises during natural or manmade disaster.

Keywords: Natural Disasters, Capacity Building, Red alert

INTRODUCTION

The term natural calamity or disaster owes its origin to the French word 'desastre' which is the combination of the article 'des' and 'astre' meaning star(1). In earlier days disaster was considered to be due to some unfavorable star. Now a day the term 'disaster' is commonly used to denote any odd events be natural or manmade. This brings about immense misery to a region and producing great material damage, loss and distress.

Disaster is assessed on the basis of the following features:

1. Disruption to a normal pattern of life such disruption is usually served and may also be sudden, unexpected and wide spread.
2. Human effects such as loss of life, livelihood and property, injury, hardship and adverse effects on health
3. Effects on social structure such as destruction of or damage to infrastructure, buildings, communication, electricity and other essential services.
4. Community needs such as immediate attention on shelter, food, clothing, medical assistance and social care.

Types of Disasters

Natural Disasters

1. Wind related : Strom, Cyclone, and Tornado Etc.

2. Water Related : Flood, Cloud Burst, Flash Flood, Excessive Rain, Draught
3. Earth Related : Earth Quake, Tsunamis, Landside, Volcanic, Avalanches Eruptions

Man Made Disasters

1. Accidents : Road, Rail, Air, Sea, Building Collapse
2. Industrial Mishap : Gas Leak, Explosion, Sabotage, Safety
3. Fire : Building, Coal, Oil
4. Forest Fire
5. Contamination/Poisoning : Food, Water, Epidemics
6. Terrorist activities
7. Ecological : Pollution [Air, Water and Noise], Soil Degrading, Global Warming, Toxic waste and Nuclear Accidents
8. Warfare : Conventional war, nuclear war and chemical war

Due to unique and widely varying geographical and geological conditions of the country, virtually all types of natural disasters take place with various intensities and in different regions. These all above mentioned calamities in any grade of severity requires immediate attention for the saving and safety of the human lives. It focuses on the management of mass casualties, the treatment of severe physical trauma and the epidemiological surveillance of communicable disease whose incident rates may increase during the disruption of public health measures following a disaster. Planning is one of the most efficient tools available to deal with the disaster. Planning can be applied in the physical aspects like land use and its advocacy which involves policies and proposals. Proper planning ensures that damages from disaster considerably reduced.

- Short term Planning consist of measures which deal with the disaster situation immediately at hand.
- Long term planning involves that can be implemented over a period of few years and needs large expenditure. Therefore these needs periodic reviews and renewals.
- A Continuous and integrated process of planning and implementation of measures with a view to;
 - a) Mitigation or reducing the risk of disaster
 - b) Reducing the severity of consequences of disaster
 - c) Capacity building
 - d) Emergency preparedness
 - e) Assessing the effects of disaster
 - f) Providing the immediate emergency relief and rescue
 - g) Post disaster rehabilitation and reconstruction

Emergency Preparedness

It means the state of readiness which enables stake holders to mobilizes, organize and provide relief to deal with an impending or actual disaster or the effects of disaster. Each department of the government in a district cell facilitate with maximum emergency preparedness.

Capacity Building

It means building of capacity to cope up with any disaster. It includes;

- Identification of existing resources relevant to any disaster and resources to be acquired for the purpose of Gujarat state disaster management act in Gujarat
- Acquiring and creating resources, organization and training of groups in local community

The High Power Community {HPC}

The HPC force constituted in August 1999 under the chairmanship Shri K C Pant and which the membership of eminent expert. It focused on natural and manmade disaster. The act or disaster management published by authority on Monday 7th April 2003, In the Gujarat Government gazette extra ordinary Gujarat act no. 20 OF 2003. (4)

An act is to provide for effective management of disaster, mitigation of effects of disaster, for administering, facilitating, coordinating, and monitoring emergency relief during, after occurrence and core implementing monitoring and coordinating measures for rehabilitations and reconstruction in aftermaths of disaster in the state of Gujarat and for these purposes to established Gujarat State Disaster Management Authority [GSDMA] and to specifies other agencies and matters connected these with or incidental these too.

Level of Severity Plan

- a. Developmental phase of monitoring and preparedness
- b. Disaster that can be handled at district level
- c. Higher intensity disaster that have to be handled at the state level
- d. Very severe disaster where interventions of central government is necessary

Authorities of Disaster Management

- a. State government
- b. Gujarat state disaster management authority
- c. Head of government department
- d. Commissioner
- e. Collector of a district
- f. Local authorship

Disaster management implicates different sectors at different times And the need for co-operation and co- ordination among local, State and national agencies never more apparent

than in the case Of disasters, hence the disasters management necessitates a Multidisciplinary approach it is not possible for any organizations To carry the burden of the disasters plan Disaster cannot be Managed in a vacuum and many agencies have to integrated and coordinated into the plan to prevent duplication and confusion It is necessary to promote maximum coordination of all the Community resources for the time when disaster may strikes.

The Emergency Relief Functions and Sub Functions

Coordination & Command

- Alerting authorized executive
- Alerting public
- Informing public
- Reporting contaminated material
- Water management
- Community and NGO participation

Maintaining Law and Order

- Cleaning and evacuation
- Fencing of the area
- Traffic control --- law and order
- Guidance of operational services
- Access and passage
- Legal investigations
- Protection and restoration of water ways

Source and Impact Control

Population Care

- Information to victims
- Public relief
- Registration of and information on victims
- Identification of casualties
- Funeral arrangements
- Providing primary life necessities
- Damage registers
- Post care

Medical Assistance

- Preventive health and medical measures
- Medical assistance
- Mental guidance and assistance

Preparedness & Response System

National Disaster Response Program

- Search and rescue team
- Capacity building of police and fire
- Disaster medical assistance team
- Mobile hospitals
- Emergency operation centers (EOC)

Special Features of Emergency Operation Centers

- EOC facility to be multi disaster resistant
- Fully equipped with all back system for communication,
- Power, food, drinking water etc
- Capable of sustaining for 15-20 days.
- Back up EOC at national and state level.

Disaster and Health Problems

Disaster invariably has health consequences. These could be due to either or any combination factors enumerated below:

- Direct impact due to drowning due to flood or injury due to earthquake
- Due to delay in evacuation
- Due to disorganization or non availability for advance medical care
- Due to delay in transportation to medical centers

The health hazards also depend on the number of factors

- Population density
- Population displacement
- Disruption of pre existing facilities
- Disruption of normal health programs
- Increased vector breeding
- Climate exposure

- Inadequacy of food and nutrition

Organization for Medical Relief

Depending upon the location and magnitude of the disaster;

First level of care is generally organized at the disaster site to provide relief and First aid to the victims. The organization of medical relief involves two distinct facts:

[A] Pre hospital care

[B] Hospital care

The pre hospital phase involves ; dispatch of First aid teams and mobilize medical services to disaster site. The preliminary phase involves ; on site treatment, stabilization and transporting to selective care facility. The definitive care phase at the hospital involves ; second stage diagnosis , emergency room treatment , intensive care , definitive diagnoses and treatment.

The recuperation and rehabilitation phase continues for long period and may even last for years in case of nuclear and chemical disaster like Bhopal Gas tragedy. Medical care which can be effectively organized at disaster sites involves some important aspects of organization and staffing.

- Command and control
- Communication
- Coordination
- Triage team
- First aid team
- Mobile hospital
- Evaluation and causality clearing team

The post disaster deaths and injuries are direct consequences where as morbidity due to variety of factors is an indirect impact.

(a) Direct health consequences: Injuries during earth quake, fire explosion, accidents are multiple fractures, head injuries, face and neck, abdominal injuries, shock, burns etc. Cyclone and drought responsible for water born diseases like diarrhea, dysentery, typhoid, viral, hepatitis, mal nutrition, respiratory diseases such as pneumonia, whooping cough, chicken pox, measles, gastro enteritis, conjunctivitis, fever etc.

(b) Indirect health consequences: Eruption & transmission of communicable diseases due to contamination of water & food supplies, disrupted sewage disposal system, over crowding & poor environment sanitation. The potential for transmission & vector borne diseases like malaria also goes up very much the third of fourth week of occurrence of disaster. Psychiatric and social maladies have been abundantly reported soon after disaster sudden mental shock due to death and destruction all around can create serious mental depression.

As the disaster strikes there is an immediate need for medical equipment required to treat the disaster victims. The hospital store fully facilitates with the vaccines, different types of antibiotics, intravenous fluids, different emergency equipments and emergency operation centers should be facilitates with first aid boxes, gloves, bandages, cotton, operating equipments & materials, disinfectant, sterilizing equipments etc.

Principles of Mass Casualty Management

Disaster medicine is a mass and multiple trauma medicine and it is not different from ordinary medicine, distinguishing feature is its Method of application and primary concern for yield and efficiency.

Some types of disasters usually results in a large numbers of casualties which are beyond the routine handling capacity of health care system Application of principles of mass casualty management helps to meet the demands of large number of people. The principles are of mass casualty Management are universal and can be applied in mass casualty situation; natural or manmade.

- Doing the best for the most within the available resources.
- Triage is in inescapable through out the chain of treatment.
- Graded care casualties, first aid, life saving measures, preparation for
- Evacuation, primary surgery and definitive treatment
- First aid measures carried at the earliest assumes life saving significance.
- First aid at the scene of disaster must be limited to monitoring and restoring vital functions.
- Simple and standard therapeutic principles.
- The casualties must be conditioned or treated so that the degree of urgency lessened.

Management of mass casualties can be divided into following phases (Mandatory components)

[a] Rescue

[b] First aid

[c] Transportation

[d] Triage and Emergency medicine

[e] Definitive treatment

(a) Rescue: The principle of save a life or limb should be efficiently employed during rescue, resuscitation first aid and emergency medicine. The first life saving procedure is rescue of victims of disaster without aggravating the exciting damage to their health and safety. Rescue operation become haphazard and hazardous due to fear and panic in unprepared conditions during sudden disaster events .Rescue in the large scale disasters is most instances must be of necessity and is performed by the survivors themselves. The rescue team supports the community rescue efforts with special equipment.

(b) First Aid: A reduction in mortality in the severely injured can be achieved by early first aid. The first aid is usually limited to primary life support measures-the main functions which are: maintaining the Airway, Breathing, and Circulation.

- Free supply of natural air.
- Clean the airway.
- Loosen collar, shirt buttons and belt, remove shoes and shocks.
- Use blankets to keep the victim warm.

General principles of first aid are as follows;

- Rescue and removal of the casualties in the shortest possible time without aggravating existing situation
- Immediate arrest of the bleeding
- Restoration of respiration circulation
- Prevention of impending shock and treatment of the shock if the victim is already in such state
- Immobilization of simple and compound fractures and dislocation
- Alleviation of pain by simple procedures and medication
- Assurance of getting well quickly and moral boosting to patients

(c) Transportation: The mass casualty management involves categorizing the casualty for priority of treatment and evacuation based on the chances of survival.

(d) Triage and Emergency medicine: The routine practice in medical care “first come first treat” is inadequate in mass casualties.

Whenever time, personnel and resources are insufficient to meet the all needs Triage in its simplest form means “sorting” of patients and is the only appropriate way to provide a maximum benefit to the injured. The process involves sorting out those wounded whose progress is most favorable. Experts among the local health personnel make a quick but careful assessment of all cases and categorization.

Emergency Medicine includes cardiopulmonary resuscitation (CPR) of victims of heart and failure is another important component. Deaths due to heart attack, electrocution, and drowning, accidental ingress of foreign body in the wind pipe can be averted by timely rendering of CPR through trained hands.

(e) Definitive treatment: There various types of classifications of casualties’ available world wide but the most common are;

Category 1: Immediate treatment: Severely injured victims who can be saved if they receive appropriate stabilization, transportation and treatment immediately

Category 2: Delayed treatment: Urgent but less serious injured who can be transport and treated after the most serious have been attended: these victims require surgery within 8 to 12 hours.

Category 3: Minimal treatment: Walking wounded who can often attend in small groups and if ambulance is in short supply can be transported by other means.

Category 4: Minor injuries: These patients which are not serious can be treated and send back to their homes or camp area. In a disaster event causing very large number of casualties this category may include moribund cases or so severely wounded than even immediate care would be inadequate to prevent death.

“Tagging” is commonly used method to indicate to indicate priority of evacuation. Various types of tags are in vogue. Each patient must be identified with tag; stating their name, age, sex, place of origin, triage category, diagnoses and initial treatment given. Usually RED tag indicates first priority, YELLOW second priority and GREEN third priority.

Objectives of Hospital Disaster Plan

The hospital plays a vital role and disaster pose lots of challenges to the health care system. Only those hospitals which are prepared can meet a demand of such disaster. The objective and purpose of disaster plan is to make it possible to attend, promptly and effectively to the largest possible number of people requiring medical care in order to reduce the number of death and disabilities.

1. To prepare staff and institutional resources for optimal performance in an emergency situation.
2. To train the staff as an educational activity.
3. To carry out periodic drills and its evaluation to update plan.

A pre requisite to good disaster management is that emergency systems must be functioning well on a routine bases. The hospital disaster plan provision should include following;

- Efficient system of alert & staff arrangement
- Conversion of a usable space into clearly defined areas for triage patients observation and immediate care
- Removal of casualties to more appropriate & definitive medical care facilities
- Special medical services for disaster cases
- Prompt transfer of patient within in the hospital
- Security arrangement
- Establishment of public information center
- Evaluation of hospital service and its sources of electricity, gas, water, food and medical supplies
- Method of identifying patients who are immediately dischargeable or transferable
Special disaster medical record and medical tag

- Planning use of O.T., X-Ray, Blood bank and laboratory

The hospital committee should include doctors and nurses as well as administrative staff. Committee generally includes the following;

- The director of hospital
- In charge of emergency and accident services
- Department heads
- The nursing superintendent
- The Hospital Administrators
- The staff representative
- The functions of the hospital disaster committee are;
- To develop the hospital disaster plan
- To develop departmental plans in support of the hospital plan
- To allocate duties to the hospital staff
- To establish the standards of emergency care
- To conduct the supervise training programs
- To supervise drills to test the hospital plan
- To renew & revise the disaster plan at regular intervals

To meet the medical care demands of disaster victims, special functional areas should be setup within the hospital, which include;

Triage or sorting areas: The triage team consisting of emergency physician surgeon, anesthetist, nursing personnel handles the incoming casualties. Here, rapid assessment of the injury & extent of severity of the casualties' injuries are carried out by team.

Primary treatment areas: Immediately after triage casualties are sent to appropriate treatment areas which include immediate urgent and non urgent areas. These in needs to immediate life saving measures are sent to resuscitation room where facilities are available for establishing airway, circulation, supporting fractures & treating shock. Casualties should remain in the resuscitation room for the shortest possible time, further investigation and treatment carried out in the treatment area. No urgent casualties may be investigated, diagnosed and treated in non urgent treatment area. Special treatment areas may be needed for the management of burns fractures and incase of chemical or nuclear disaster victims.

Secondary Treatment areas: The secondary treatment areas include all the wounds, critical care units and operating and diagnostic departments. The setting up of one or more wards to receive all the admitted victims of disaster is essential.

Additional bad are made available in other wards. Suitable patients to be discharge home. The hospital plan often face to start when disaster strikes because they are design on all or

non response. Graded response or phased response has been suggested to overcome these problems. The graded system is as follows;

Green alert: Prepare for sudden influx of casualties.

Amber alert: Prepare hospital to alert a large number of casualties. It is an extension of green alert.

Red alert: Prepare hospital for a major community disaster. It is an extension of green and amber alert, mainly in time scale involved

Alert and recall: The hospital may receive disaster alert on telephone or from casualty's staff when casualties arrives, staff alert and recalling is first step in implementation of plan. Alerting systems should frequently and timely check, because failure of this level will inevitably mean failure of rest of plans. Methods of alerting hospital staff will vary from hospital to hospital depending on type's sizes communication facilities and location of the hospital. The atmosphere of chaos and confusion and overload of work is expected in disaster situation. An efficient execution of the disaster plan needs effective control to meet the goal.

CONCLUSION

The role of medical profession during disaster or natural calamities wide based; from active participation in mitigation programmers, community awareness, rescue team training, planning committee advisories, first aid team teacher to as a doctor taking active participation in saving the human lives. And reducing morbidity and mortality and keeping boost-up mental stability of all the persons. We should be always thankful to God as we people having this skill and gift and profession; that we reduce the disaster miseries and make human lives to as near natural and normal as possible.

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