

ROLE OF DENTIST IN MASS DISASTER

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ABSTRACT:

Natural disasters and terrorist activities leads to the mass casualty situations unexpectedly around the globe. Every disaster is unique and involves interplay of different factors. Disasters not only affect developmental activities, they also can push the progress of nations backwards by several decades. Dentists are one of the important constituents of health team, yet their role or utility has not been emphasized lately. Oral healthcare personnel including dentists can be utilized successfully for the emergency medical response system in building the required partnerships, to identify and garner resources, and in facilitating training, development of suitable policy and surveillance and evaluation. The contents of this review describe the roles that oral health care providers in disaster response.

Key words: Mass disaster, Bioterrorism, Dentist, Public health.



INTRODUCTION:

India has been traditionally vulnerable to natural mass disasters on account of its unique geo-climatic conditions. Disasters not only affect developmental activities, they also can push the progress of nations backwards by several decades. A total of 80% of the area of India is prone to natural disasters. Twelve percent of the country's landmass is prone to floods and river erosion, and 58.6% is prone to earthquakes. Hilly areas can witness landslides and avalanches, and 68% of cultivable area is drought-prone. A total of 5,700 km out of the 7,516 km-long coastline in India is prone to cyclones and tsunamis. Moreover, the threat of disasters and emergencies of chemical, biological, radiological, nuclear and explosives (CBRNE) origin is constantly present in India [1].

Bioterrorism is the intentional mass disaster with the use of micro-organisms

and toxins to produce disease and death in humans, livestock and crops, their attraction in war and for use in terrorist attacks is attributed to various unique features. Biological weapons can be disseminated by aerosol sprays, explosives or food and water contamination. They can strike suddenly without any warning and inflict considerable mortality and morbidity that can continue for a long period, such attacks may create high level of panic, environment contamination and extreme pressures on emergency health services [2].

Terrorist attacks and other catastrophic events are likely to create demands that far exceed the capacity of the medical and public health systems to respond. Not only are the numbers of casualties likely to be high, fear and the urgent need for information will complicate the

ability to react. Regardless of origin, all disasters reflect unique environments, needs and risks within a given community, jurisdiction and state [3].

The roles of traditional first responders shift in case of severe disaster events, particularly when the number of victims overflows the hospitals and clinics. In such situations, dentists and dental auxiliaries play a vital role in response to disaster by wide range of skill sets based on personal experience, training and enthusiasm [4]. Dentists are one of the important constituents of health team, yet their role or utility has not been emphasized lately. Oral healthcare personnel including dentists can be utilized successfully for the emergency medical response system in building the required partnerships, to identify and garner resources, and in facilitating training, development of suitable policy, surveillance and evaluation [5].

Over the past couple of years, the Govt. of India has brought a paradigm shift in approach to disaster management. The approach has been translated into a National Disaster Framework covering various aspects which have been shared with all state governments and union territory administrations and hence there is a common strategy. The national emergency management authority will be an integral part of Govt. while retaining the flexibility of a field organization with representatives from various departments including department of health [6].

As other medical related fields are vital in responding to disaster, oral health care providers also play an immense role in disaster response as well. The contents of this review further describe the roles that oral health care providers in disaster response.

DENTAL PROFESSIONALS AND RESPONSE

Dental professionals can be helpful during a major public health disaster in the following ways:

1. Supporting other Health Professionals

Private practitioners, local dental societies and interested individuals should make local emergency response planners aware of the services that the dental profession can provide in case of disaster response [7]. Dentists and their dental auxiliaries can augment the existing medical professionals, in responding to a declared medical emergency. When the local medical resources are unable to cope adequately with huge number of victims, dentist can be recruited to provide certain services that will allow physicians to do things only they can do. Dentists can enhance the surge capacity of the local medical system until additional physicians arrive or demand for immediate care decreases [5].

2. Dental Offices acting as Medical Sites

Dental offices are equipped with potentially useful equipment and supplies and should be prepared to serve

as decentralized auxiliary hospitals in case the need arises [8]. Further, dental offices, equipped with air and suction lines, x-ray equipment and sterilizing capability, can be used as self-contained alternate medical sites if hospitals are under attack or are unsafe because of widespread infection associated with biological weapons [9]. There is a need to marshal all available resources in response to a disaster of great magnitude if losses and disruption of everyday life are to be minimized and recovery facilitated [5].

3. Dental Surveillance

Dentists can contribute to bioterrorism surveillance by being alert to clues that might indicate a bioterrorist attack. Bioterrorism attacks and pandemics often have relatively indistinguishable beginnings and ends and unpredictable effects on a population. Such surveillance would note if there is an influx of people seeking medical attention with non-traumatic conditions and flu-like or possibly neurological or paralytic symptoms. A wide distribution of dental offices in nearly every community makes them less vulnerable to complete elimination in a catastrophic disaster. Since dentists are scattered throughout a community they can be a part of effective surveillance network with their eyes and ears open to information on unusual syndromes in the community as well as unusual clinical presentations [10].

4. Forensic Assistance

Forensic odontology continues to be a crucial element in nearly all mass disasters irrespective of its incidence, viz. natural or accidental. This is one area which makes the dental professionals unique and far more important than others, especially in catastrophic events. The multiple functions of this unique discipline can range from the identification of human remains to mass disaster management, including the assessment of bite marks and patterned skin injuries along with the use of dental materials in the examination of evidence [11]. Dental identifications have always played a key role in victim identification during natural and manmade disaster events, particularly mass casualty events normally associated with aviation disasters [12]. A dental record is a well-structured document recording the details related to the history of the illness, physical examination, diagnosis, treatment, and management of a patient. The legislation compels dental professionals to produce and maintain adequate patient records. Dental records can also find their use in forensic cases, teaching and research, as well as in legal matters. Comprehensive and accurate records are a vital part of dental practice. However, primarily dental records are maintained to deliver quality treatment and care to patients and for follow-up.

5. Triage Services

Triage is derived from French word 'trier', which means to sort out. It is

applied to various situations ranging from everyday triage of emergency department patients to large scale disasters [13]. During a mass casualty event when there may be deficiency of personnel, facilities, and medical supplies, it may not be possible to give immediate treatment for all casualties. In such situations, triage must be done to prioritize treatment plan. Dentists can provide assistance in these treatment procedures without further training. This provides additional help to physicians providing definitive care for patients most urgently in need rather than screening casualties. Dental offices could serve as triage centres if needed [14]. Triage consists of rapid classification of the injured on the basis of the severity of their injuries and the likelihood of their survival [6].

Red colour indicates high priority treatment or transfer.

Yellow colour signals medium priority.

Green colour indicates ambulatory patients.

Black colour is for dead or moribund patients.

6. Tagging

All victims should be identified with tags stating their name, age, place of origin, triage category, diagnosis and initial treatment

7. Distribution of Medication

In mass casualty situations, particularly after a bioterrorism attack or the unfolding of a pandemic infection, the population may require medication to treat or prevent the manifestation of the infection being faced. Physicians, nurses, and pharmacist may not be able to effectively prescribe or dispense the medication necessary in the critical, appropriate time required. Dentists can be called on to prescribe and dispense the medications required after the determination has been made by the physician and public health officials managing the disease outbreak. Dentist also can monitor patients for adverse reaction and side effects and refer patients who experience untoward effects from the medications to physicians for treatment, if necessary [8,15].

8. Immunization

To limit the spread of infectious agents, whether from a natural pandemic, a deliberate bioterrorism attack, or contamination as a result of a local event, rapid immunization of great numbers of individual may be required in a short amount of time. In major metropolitan areas, where the spread of communicable disease is facilitated, this effort may involve millions of people. Physicians and nurses may be unable to implement such a program in critical time frame required. Dentists can participate in mass immunization programs with minimum of additional training and may be critical factor in the

success of urgent programs. Dental offices can be used as immunization sites to minimize the concentration of potentially infected persons [13, 15].

Emergency Preparedness-Curricula Proposed for Dental Schools

The current increased threats of terrorism clearly support the need to

incorporate terrorism preparedness and response material into the curriculum for every health professions school [16]. A total of seven catastrophe preparedness competencies are identified for dental graduates during the first three years of their course (Table 1).

Table-1: Catastrophe Preparedness Competencies

Competency	Description
1	Describe the potential role of dentists in the first/early response in a range of catastrophic events.
2	Describe the chain of command in the national, state and/or local response to a catastrophic event.
3	Demonstrate the likely role of a dentist in an emergency response and participate in a simulation/drill.
4	Demonstrate the possible role of a dentist in all communications at the level of a response team, the media, the general public, and patient and family.
5	Identify personal limits as a potential responder and sources that are available for referral.
6	Apply problem-solving and flexible thinking to unusual challenges within the dentist’s functional ability and evaluate the effectiveness of the actions that are taken.
7	Recognize deviations from the norm, such as unusual cancellation patterns, symptoms of seasonal illnesses that occur out the normal season, and employee absences, that may indicate an emergency and describe appropriate action.

These competencies are based on the recognition that the knowledge and skills possessed by the average dental student upon graduation may be utilized by the public health care system in times of crisis [17]. An integrated fourth-year course in catastrophe preparedness can also be developed for dental students. This type of course is already implemented in the dental curricula of

New York University as a Senior Level Course [18]. A program called as the ‘National Disaster Life Support’ (NDLS) training program can also be developed to better prepare health care professionals and emergency response personnel for mass casualty events [19]. The program consists of three levels of courses of increasing clinical complexity: 1) Core Disaster Life Support (CDLS), 2) Basic Disaster Life Support (BDLS), and 3) Advanced Disaster Life Support (ADLS).

These programs can also be incorporated into the post graduate training curriculum.

CONCLUSION:

Dental professionals form an integral part of the health care community and they can provide care to the public by playing various health care roles, following natural mass disaster events. Oral health care providers and governmental bodies which are related to emergency medicine, rescue and

natural disasters, should always be on the alert, to be able to provide help during such events. All of these skills apply directly to catastrophe response. Proper training prepares responders to consider various hazards and means to mitigate their effects. Inculcating emergency response to a disaster in the dental undergraduate curriculum and continuing educational programs for practitioners can prepare us well in advance in the wake of any unforeseen circumstance.

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