

## Role of dentist in Disaster Management: A review

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### Abstract

Natural or manmade disaster comes with the need of both manpower as well as health care and public health systems. Effective management of a disaster requires preparedness and appropriate attitude of healthcare workers. Attitude of the healthcare workers will impact their response during any emergency situation coping. Dentists and dental auxiliaries can aggrandise the existing medical professionals, in responding to a declared medical calamity. This paper aims at discussing the role of dentists in disaster management. Articles were searched in various medical databases such as Google Scholar, PubMed Central, Science direct, Scopus, EBSCO host, Sci hub to gather all relevant information. The literature search unwraps the potential of dentistry in disaster management revealing the extended roles of a dentist.

**Keywords:** *Dentists, Disasters, Role, Disaster Response, Mass Casualty Situations, Disaster Preparedness.*

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### Introduction

If we no longer treat the deceased with respect, what hope do the living have? One A disaster is defined as "a major disruption of the functioning of a community or a society involving widespread human, material, economic, or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources," according to the United Nations Office for Disaster Risk Reduction (UNISDR).<sup>1, 2</sup> A disaster is an unforeseen occurrence that can be man-made, natural, or hybrid in origin and that has the potential to severely damage the environment, property, and human life.<sup>3</sup> Both natural and man-made calamities impact millions of people annually. Explosions, earthquakes, floods, hurricanes, tornadoes, and flames are

examples of disasters.<sup>3</sup> When a crisis strikes, people must the risk of physical harm or death. They might also lose their community, house, and belongings.<sup>4</sup> They run the danger of developing mental and physical health issues because of these pressures.<sup>4</sup>

Following a tragedy, stress reactions resemble the typical reactions observed following any kind of trauma. A wide range of emotional and physical responses can be triggered by disasters. Along with triggers or reminders of the trauma, you could also react to issues that arise after the incident.<sup>4</sup>

Disaster management, according to UNISDR, is the preparation, execution, and coordination of actions in anticipation of,

responding to calamities and beginning the process of recovery.<sup>2</sup> Disaster response, disaster preparedness, and disaster mitigation are the three main facets of disaster management.<sup>5</sup>

- After a disaster strikes, response is the series of actions taken to determine needs, alleviate suffering, stop the crisis's spread and effects, and pave the road for recovery.<sup>6</sup>
- The actions that guarantee the systematic mobilization of people, money, supplies, and equipment in a secure setting for efficient relief are known as preparedness measures.<sup>6</sup>
- Mitigation is the long-term lowering of a disaster's risk. Reducing the hazard's resistance and vulnerability is known as primary mitigation. Secondary mitigation is the process of lessening the impact of the risk (preparation).<sup>6</sup>

During their pre-doctoral training, dentists in India and outside receive medical and surgical training that equips them to handle emergencies.<sup>3</sup> Additionally, they receive training on how to manage medical emergencies in hospitals and dental offices, including minor surgery, medication administration, injections, and anesthesia.<sup>3</sup> Furthermore, forensic odontology and the support of dental members in Disaster Mortuary Operational Response Teams have been the main roles that dentists have performed in catastrophes.<sup>3</sup> Due to their invaluable skills, dentists are also employed in the military.<sup>3</sup> Thus, the purpose of this essay was to educate readers about different types of catastrophes and the part dentists play in disaster relief.

### Levels of Disasters:

**Level-L1:** administered within the district's resources and competencies. The state authorities are still prepared to help, though, if necessary.<sup>2</sup>

**Level-L2:** call for support, proactive state-level resource mobilization, and the establishment of state-level disaster management agencies. The main agencies

keep an eye out for prompt deployment if the state calls for it.<sup>2</sup>

**Level-L3:** a situation that is almost catastrophic or a massive calamity that overwhelms the State and local authorities.<sup>2</sup>

### Objectives of Disaster Management:

- Minimize (prevent, if at all feasible) the possible loss due to risks.
- Ensure victims receive timely and appropriate assistance when needed.
- Make a quick and long-lasting recovery.<sup>2</sup>

**Emergency:** is a situation where extraordinary steps are made to prevent a calamity and regular procedures are suspended. It is possible to characterize an emergency in terms of the social, political, and epidemiological conditions around it.<sup>6</sup>

**Response:** is the collection of actions taken following a disaster to determine needs, lessen suffering, stop the disaster's spread and effects, and pave the path for rehabilitation.

**Rehabilitation:** is the return of fundamental social roles.<sup>6</sup>

**Reconstruction:** The probability of a disaster is permanently decreased when mitigation is fully resumed. Reducing vulnerability and the hazard's resistance is known as primary mitigation. Secondary mitigation is the process of lessening the impact of the risk (preparation).

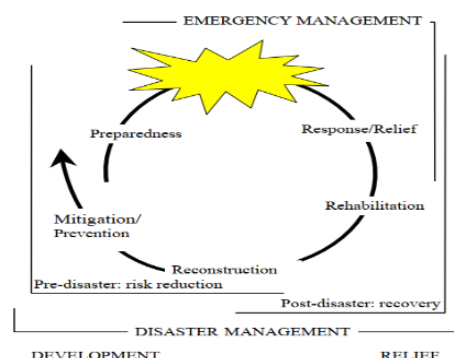


Fig 1: Disaster Management cycle

Recognizing that disasters will happen, attempting to lessen their negative impacts, and limiting their influence on human suffering, financial resources, socioeconomic activity, and preventive efforts are all part of mitigation.<sup>6</sup>

**Preparedness:** are the steps that guarantee the planned mobilization of people, money, supplies, and equipment in a secure setting for efficient relief. Building up capabilities prior to a crisis scenario occurring in order to lessen its effects is known as disaster preparedness. Food reserves, emergency funds, seed reserves, health facilities, warning systems, logistical infrastructure, relief manuals, and project shelves are only a few of its initiatives.

**Major Disasters in India:** The Bhopal Gas Disaster in 1984, the Gujarat earthquake in 2001, the Indian Ocean tsunami in 2004, 2008: Attacks in Mumbai Floods in Uttarakhand in 2013 Floods in Jammu and Kashmir in 2014 2016: Forest fires in Uttarakhand 2018: Dust storms in India the coronavirus pandemic of 2019–20.<sup>6</sup>

**Disaster Management Act:** A National Disaster Management Plan (NDMP) for the entirety of India is required per Section 11 of the DM Act 2005. The National Policy on Disaster Management (NPDM) of 2009 and the DM Act's requirements that the Government of India and its key ministries have sufficient DM plans are both met by the proposed NDMP.<sup>2</sup>

**Role of Dentists:** Large numbers of casualties probably will not require medical attention until after a certain kind of tragedy. Since most injuries happen during the impact, the first several hours are when emergency care is most needed. Search and rescue, first aid, victim triage and stabilization, hospital treatment, and patient transfer to another hospital if required are further subdivided under mass casualty management.

**Search, rescue and first-aid:** The demand for search, rescue, and first aid during a large disaster is expected to be so high that organized relief organizations will only be able to cover a small portion of it. The unharmed survivors provide the most rapid assistance.<sup>5</sup>

**Dental Surveillance:** By staying informed about uncommon clinical presentations and uncommon disorders in the community, dentists can participate in an efficient monitoring network. To aid in the early discovery of a bioterrorism attack, dentists can also alert public health authorities about the existence of patients who have cutaneous, intraoral, or both types of lesions. By using timely preventative and curative measures, early diagnosis of an infectious pathogen in a community helps reduce mass mortality.<sup>7</sup>

**Dental Offices Acting as Medical Sites:** Dental offices have the necessary supplies and equipment to act as decentralized auxiliary hospitals in an emergency. If hospitals are under attack or are dangerous due to widespread infections linked to biological weapons, dentist offices with air and suction lines, X-ray equipment, and sterilizing procedures can serve as self-contained alternative medical locations. No other medical professional has a clinic as well-equipped to serve as a backup medical location in the case of a major calamity.<sup>2</sup>

**Distribution of Medication:** Following the disease outbreak, dentists can prescribe and supply the necessary drugs under the direction of public health experts. Dentists can keep an eye out for negative responses and side effects in their patients, and if needed, they can refer them to doctors for additional care. Additionally, dentists can provide information regarding the medicine, its use, adverse effects, and the patient's need for compliance.<sup>2</sup>

**Immunization:** There might not be enough doctors and nurses on hand to implement

vaccination campaigns in a constrained amount of time. Trained dentists can take part in mass vaccination campaigns as part of urgent programs. To reduce the number of possibly infected patients, dental clinics can also be thought of as immunization locations.<sup>7</sup>

**Definitive Treatment:** In addition to providing patients with various injuries with aesthetic and surgical services, oral and maxillofacial surgeons are properly trained to provide cardiopulmonary resuscitation, endotracheal intubation, and first aid. Dentists can recognize the signs and symptoms of the infectious disease that kills large numbers of people. Dentists routinely gather nasal swabs, salivary samples, and other materials for laboratory processing, which enables accurate diagnosis, treatment progress reports, and patient infection status.<sup>2</sup>

**Triage Services:** The word triage comes from the French word "triage," which means "to sort-out." It would not be feasible to treat every casualty right away during a mass casualty event due to a lack of facilities, manpower, and medical supplies. Triage must be carried out in these circumstances to prioritize the treatment plan. Therefore, without additional training, dentists can assist with various treatment techniques. Instead of screening casualties, this gives doctors more assistance in giving definite care for patients who are most in need. If necessary, dental clinics might act as triage centres, with red denoting a high priority treatment transfer, yellow denoting a medium priority, green denoting ambulatory patients, and black denoting patients who are dead or moribund.

**Forensic Assistance:** One thing that sets dentists apart in catastrophic situations is this. Assessing bite marks and patterned skin injuries is part of the identification of human remains for mass disaster management. using dental materials found in the analysis of the data. In the event of a

natural or man-made disaster, dental identifications are crucial for victim identification. Dental practitioners are required by law to create and keep sufficient patient records. Dental records can also be used in judicial proceedings, teaching, research, and forensic cases. An essential component of dental practice is keeping thorough and accurate records.<sup>2</sup>

**Supporting Other Health Professionals:** Informing the local emergency response planners about the services provided by the dental profession during a crisis is the duty of private practitioners and local dental associations. When local medical resources are insufficient to handle the growing number of patients, dentists can be hired to perform certain services that only doctors can perform. Until another team of doctors can arrive or the need for urgent care subsides, dentists can increase the local medical system's surge capacity.<sup>7</sup>

**Infection Control:** They may contribute their experience to mass casualty scenarios and are well-versed and trained in asepsis. Dentists can assist in preventing decontamination victims of specific bioterrorism assaults, when caregivers may become infected by touch with a patient's clothing or skin surfaces. When it comes to handling the remains of victims whose deaths were caused by contagious diseases, dentists who are already experienced with disaster mortuary procedures can be helpful.<sup>7</sup>

**Quarantine:** Strict quarantine regulations should be put in place during a pandemic or following a bioterrorism incident involving a communicable agent since primary care professionals could contract the infection directly or through contact with patients who are seeking treatment. people may not infect dentists in the same way because sick people avoid seeing dentists and, if they are sick enough, miss appointments. Dentists could be asked to offer some basic medical care to those in the quarantined area.<sup>7</sup>

**Disaster Victim Identification:** In the aftermath of a large disaster, one of the most trustworthy ways to identify specific victims is through dental evidence. The jaw bone's structure or dentures of various sizes, forms, makers, and compositions may also be used to identify people who have lost all their teeth. Additionally, dental information can be used to ascertain a person's age, gender, and race. Dental abnormalities such as missing teeth, additional teeth, or an extra cusp can also serve as a crucial foundation for identifying a person. Dental problems can also provide a rapid, accurate, and trustworthy way to estimate age during emergencies.<sup>2</sup>

**Tagging:** Every patient should have a tag that includes their name, age, origin, triage category, diagnosis, and first course of therapy.<sup>5</sup>

## Conclusion

Disasters are sudden and inevitable for any hospital or community, hospital's response to which becomes crucial to save human lives during the critical time. Attitude of health care workers towards disaster management is very important as it impacts their response during any emergency situation. Dentists can provide a valuable service to their patients and communities by providing quality information regarding possibility of attacks, after effects of these attacks and appropriate steps to be taken in response to such attacks.

## References

1. Chakraborty P, Pandey A, Natarajan S, Dahal S. Awareness and perception of an Indian dental professional in context to the process and their role in disaster victim identification as a taskmaster. *J Forensic Odontostomatol.* 2022;40(3):34-44. Published 2022 Dec 30.
2. Syed AA, Hamid N, Khan A, Farah Z. Role of dentist in disaster management: An Indian perspective. *IOSR Journal of Dental and Medical Sciences.* 2020;19(6):23-26.
3. Shaluf IM. An overview on disasters. *Disaster Prevention and Management: An International Journal.* 2007;16(5):687-703.
4. Makwana N. Disaster and its impact on mental health: A narrative review. *J Family Med Prim Care.* 2019;8(10):3090-3095. Published 2019 Oct 31. doi:10.4103/jfmprc.jfmprc\_893\_19
5. Park K. Park's textbook of preventive and social medicine 26th ed. Banarsidas Bhanot Publishers; 2021.
6. Sena L, Kifle W. Disaster Prevention and Preparedness. Published 10.25.2006. URL-<http://hdl.handle.net/123456789/1626>.
7. Dutta SR, Singh P, Passi D, Varghese D, Sharma S. The Role of Dentistry in Disaster Management and Victim Identification: An Overview of Challenges in Indo-Nepal Scenario. *J Maxillofac Oral Surg.* 2016;15(4):442-448. doi:10.1007/s12663-016-0896-4

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