Disaster Mitigation & Capacity Development: Need for Specialized Preparedness [following December 26, 2004 Indian Ocean Tsunamis]

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Abstract

On December 26, 2004 the double disaster of Asia Pacific undersea earthquake and the consequent tsunamis caused 223,000+ human deaths, multiple injuries and psychological trauma to hundreds of thousands, and destruction and damage worth more than 10 billion dollars in 12 countries including India. In south India a Tsunami Medical Relief Camp provided services to over 22,000 victims from January 07 to July end 2005. Substantial literature and guidelines are available on preparedness in general and in capacity building in relation to disaster management. One of the lessons learned was that in India there was a need to define, explore, document and discuss the requirements of individual medical, nursing, paramedical and allied specialities in order to bridge the existing lacunae in policies, preparedness and execution at local/national/international levels.

Introduction

“A disaster is any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and health services on a scale sufficient to warrant an extraordinary response from outside the affected community or area” - WHO 1995 [15]. Similar definition had been offered by American College of Surgeons: Committee On Trauma [ACS COT] [1].

Material & methods [including historical background ]

On December 26, 2004 the Asia Pacific undersea tectonic plates jostled around creating the worst tsunamis mankind has experienced in documented history. The earliest indication of what was to come was when the sea began to recede soon after the dawn. Not knowing that this was just a harbinger of disaster (unlike some tribes in Andamans that retreated into forests) the coastal populace flocked to the seashore to witness the strange phenomenon. At Kanyakumari the sea floor was laid bare up to Vivekananda rock, a tourist attraction in the middle of the sea that was heretofore accessible only by boat. Suddenly the waters began to swell and then in a trice a towering three storey high cliff of sea water smashed its way almost two km inland, flattening everything in its path [12].

A magnitude 9 earthquake ruptured the sea floor off Sumatra Island displacing millions of tons of water and sending waves up to twenty meters high across the Indian Ocean. A dozen countries on two continents were hit. Indonesian province of Aceh suffered most. Thailand beaches were trashed. Coastal villages and towns from Sri Lanka to East Africa were levelled. In South India eastern coast bore the brunt where along more than 600 km villages were either totally levelled or urban areas partially destroyed. The farthest South Indian island vanished from the map [10]. More than 223,492 people lost their lives. Hundreds of thousands more were injured and affected psychologically. The damage and destruction to properties and infrastructures was estimated at more than 10 billion dollars [3].

Tsunami Medical Relief Camp 2005 became functional on Jan 07 , 2005 at Devenampattinam , Cuddalore distt. , Tamilnadu 607001 , India including multiple teams from national and international partners including Christian Medical College & Hospital [CMC & H ], Ludhiana . At the Tsunami Medical Relief Camp 2005 , orthopaedic services were provided to over 5000 outpatients out of 22,000 + . More than 139 procedures and orthopaedic surgery were performed up to July end 2005 keeping in mind the international humanitarian concerns regarding the disabled / deformed people [5,6,15].

Discussion

“The December 26, 2004 Indian Ocean tsunami was a disaster of true international proportion. The international nature should broaden the scope of disaster research exploration. One can expect a steady flow of observational accounts and scientific papers that examine and evaluate the tsunami from many perspectives” [13].
“Though many organizations and persons have a self conceived mandate to assist those stricken by disaster and many are blessed with the resources to do so, the majority of responding personnel are “short timers” – they volunteer for short periods, and then, return to their usual occupations. The experiences are not passed on - with some exceptions, the responders are novices” [2].

Literature is available on different aspects of disaster preparedness in general [1]. Published literature search revealed two orthopaedic reports after tsunami disaster and a paragraph briefly mentioning orthopaedic preparations for deployment with IMSuRT - International Medical / Surgical Response Teams [9].

Multiple searches yielded nil positive results relating to the specific aspect of orthopaedic preparedness in relation to disaster management. Orthopaedic surgeries following July 1998 Aitape tsunami were twin reported by Holian [8], and Taylor [14]. Holian and team together with Australian defence force team, Taylor and team performed about 200 operations including general surgery. Orthopaedic surgeries included 47 bone and joint operations [ close reductions, open reductions and internal fixations, Rush pins, external fixations, aspirations, Steinman pin insertions, amputations] and 85 soft tissue operations , 77 of which were debridements.

Orthopaedic surgery, a specialty of medical sciences, contributes its own share in the management of victims of mass casualty incidents or disasters - natural or man-made. Roles of orthopaedic surgeon in United Nations Peacekeeping Operations and in armed conflicts/war scenario have been documented in two editorials [4, 7]. Orthopaedic Surgeon is a team member of I M Su R T [9].

The latest Medical Preparedness Aspects of Disaster issued by the Govt. of India , Ministry of Health and Family Welfare (2010) [16] has brief descriptions regarding

1. Full-fledged containerized hospitals
2. Biosafety laboratories of levels 3 & 4
3. Licensed blood banks
4. Burn centres
5. Trauma centres: apex, state, zonal, regional, district levels
6. Transportation: ambulance network, accident relief medical vans, ambulance trains of Indian Railways, helicopter ambulance
7. Alternative systems of medicine: ayurvedic, unani, homeopathy
8. Disaster resistant communication connectivity, telemedicine
9. Community response - first aid training
10. Psychological support and mental health services
11. Capacity building: ATLS- advanced trauma life support, Basic Life Support, emergency medical response to CBRN (chemical biological radiation nuclear) disasters- training capsule in Delhi
12. Incident site- medical first responders
13. Evacuation & treatment in hospitals- with sequel
14. Prevention of epidemics and psychological problems etc.[16 ]. Understandably and unfortunately orthopaedics as well as many other relevant service providers and specialties remain neglected or underrepresented in this important document.

**Conclusion**

Absence and paucity of relevant publications indicate the need to undertake studies on preparedness status and requirements of individual medical specialties as well as healthcare service providers and other responders. Orthopaedic surgery, orthopaedic rehabilitation, orthopaedic nursing, orthopaedic preparedness, orthopaedic surgeon’s roles, attributes, and requirements in relation to civilian management of mass casualty incidents/disasters have very sketchy mention and require definition, exploration, discussion, development and documentation by government and non government organizations in India.

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16. www.ndma.gov.in
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