

# Medicine and Society

## Health impact is the invisible side of terrorism

BIDHU K. MOHANTI

### ABSTRACT

Since 2014, there is a shift in terror targets, with a 172% increase in the deaths of common citizens. India ranks fourth in the global terrorism index. Intelligence, security and counter-terrorism conjointly form the contours of priority for governance and public engagement but the attendant aspects of health system remain neglected. Recurring acts of global terrorism have given rise to unique medical requirements that can be termed as 'terror medicine', geared towards managing health impacts of terrorism and not just a single patient. Health impacts of terrorism that affect vulnerable and non-combative citizens will need a well-developed healthcare delivery mechanism consisting of four components: medical preparedness, incident management, care of injuries and body functions, and intervention for psychological consequences. Terror medicine should not be considered a 'dangerous territory', as it can provide opportunities for healthcare to gain new strengths of knowledge and research, similar to the medical outcomes from the two world wars.

Natl Med J India 2017;30:285–6

### INTRODUCTION

Terrorism has over the years crossed regions, borders and countries to become a global concern. Many people take up terrorism as their avowed life-time engagement. It is estimated that globally <1% of the world population performs acts of terrorism; however, in some countries ridden by strife and poor governance, 10%–20% of inhabitants are involved in such acts. No space, whether land, water or air, is immune to terrorist activities. The global terrorism index (GTI) ranks nations according to the terrorist activity; data collected from 162 countries showed deaths due to terror incidents in 67 countries. There was a shift in the distribution of terror targets in 2014, with a 172% increase in the deaths of common citizens.<sup>1</sup> India ranks fourth in the GTI report. In Southeast and Middle-east Asia, Africa and parts of South America, i.e. places afflicted with political conflicts, terrorism has become an important chronic cause for vulnerability of the citizens. Internet and mobile technologies are widely used by terrorists and militant groups to spread hatred, propagate fanatic beliefs, indoctrinate new recruits and inflict cyber-attacks on institutions and organizations in a community or country. Developed countries in Europe are getting drawn into these conflicts and terrorist attacks are occurring regularly in major cities.

Tears and candles, flowers and prayers are collective symbols in the aftermath of a terrorist carnage. The impact of terrorism on our health and mind, more so on those in the immediate vicinity of a terror incident, remains a neglected area of research. Whereas

intelligence, security and counter-terrorism conjointly form the contours of priority for governance and public engagement, measures concerning the health system are largely confined to attending to those injured, maimed and deceased. Healthcare personnel are not given the responsibility to engage in any manner with terrorism and its aftermath. To an extent, the health system has also neglected to engage with 'terrorism and health' for the purposes of training, skill development and research strengthening of its human resource. Even the funding and publishing agencies, which drive medical research and publication in a country or at the global level, arguably consider the study of terrorism-related health tasks as 'dangerous research'.<sup>2</sup>

Terror medicine—a recently coined term—aims to address the gaps in global or national healthcare.<sup>3</sup> According to WHO, 'health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'. WHO further emphasizes that 'the health of all people is fundamental to the attainment of peace and security and is dependent on the fullest cooperation of individuals and States'. It is well known that the health of a population is compromised in areas of strife and terrorism. Cole and co-authors from the USA, in an article published in 2014, state that principles of medical management should be geared to a terror event and not just to a single patient.<sup>4</sup>

Subsequent to the initial proposition for this field of medicine in 2006, 'terror medicine' was defined in the past decade to be related to emergency and disaster management, yet is focused on health issues ranging from medical preparedness to psychological manifestations specific to terrorist attacks. Cole, a pioneer in developing this field, has asked, 'Can we improve response of our medical personnel in future ... in order to save lives when they treat victims of terror attacks?'<sup>5</sup>

### HEALTH SYSTEM REQUIREMENTS

Terrorists work in organized groups using their weapons to cause high volume maiming and killing. Their weapons come in various shapes and forms; often proving difficult for the police, intelligence and crime agencies to suspect and identify. Using arms and bombs, chemical and biological agents, radiation and drugs, terrorists develop skill sets to handle all these to a devastating effect. The targeted areas are usually public places with a large number of people, such as hotels, public squares, malls, cinema halls, air terminals, trains, bus stations, places of worship or schools. The attack is unleashed in a short span of time. It becomes a complex scenario where law enforcement personnel are unable to segregate people with different types of injuries and those who are dead. When a large number of people are killed or maimed by an act of terrorism, the usual response is to rush the bodies to nearby medical facilities. Rarely is there an adequate understanding of the health profile, age mix and biomedical effects of the range of weapons used.<sup>6</sup> The health workers who attend to the injured are often clueless and can barely apply the principles of emergency

Department of Radiation Oncology, Fortis Memorial Research Institute, Gurgaon, Haryana, 122002, India; drbkmohanti@gmail.com

trriage to maximize survivors.<sup>7</sup> Recent terrorist attacks have shown that disaster drills or simulation-based training are inadequate compared to the real-world work experience.<sup>8</sup> Medicine is a science where knowledge and intervention go hand in hand.

The steps to institutionalize 'terror medicine' can begin by introducing its principles to graduate and postgraduate medical students. Similar to other clinical teaching, the learning of terror medicine will be based upon three key components: exposure, demonstration and competence.<sup>4</sup> Though the efforts to include 'terror medicine' in the medical schools have been erratic over the years, the curriculum has developed well in schools under Rutgers and New York universities in the USA.<sup>5</sup>

It is time for us in India to recognize that acts of terrorism are performed with a high degree of secrecy, but the visible health impacts cannot remain an unknown territory of medicine. Physicians should not be viewed as those who are fearful to tread this path of mayhem on fellow human beings. In the past 10 years, the medical community has made occasional efforts to learn from terrorism, whether it is about the effects of anthrax aerosol on the respiratory system or the RDX explosive to cause seizures and blood pressure changes.<sup>9</sup> Yet the medical literature is lamentably sporadic and erratic, with little focus to build 'terror medicine' into the emergency medicine curriculum or to train health professionals for clinical and research pursuits.<sup>4</sup>

Biomedical experts suggest four components for a health action plan in the face of global terrorism: medial preparedness, incident management, care of injuries and body functions, and intervention for psychological consequences.<sup>3</sup> All these four components are equally important for any community or nation to take care of the health of its individuals affected by terrorist acts. Efforts are also needed to (i) prepare the healthcare workforce as a 'terror medicine' team; (ii) understand the different dimensions of response and competence for the incident management; (iii) drill the triage approach to identify the seriously sick *vis-à-vis* those who can be attended on the spot; and (iv) manage the mental health of affected victims and even citizens in the vicinity of an attack. When we take into account the timely interventions required to maximize the numbers of survivors from body injuries after a bomb explosion inside a religious monument or a lorry mowing down people in a crowded shopping area, a variety of health expertise should be in place for prompt attention or timely referrals—surgery, orthopaedics, neurosurgery, internist, anaesthesia, burns, laboratory medicine, medical jurisprudence, infection control and human nutrition. On a long-term basis, biochemists, microbiologists, geneticists and psychiatrists will play a prominent role in assessing or intervening in such situations. Studies have documented that the health utilization after terror acts is both at the primary and secondary health system levels and the requirement is much longer than for those who suffer non-terror road traffic accidents.<sup>6</sup> Both for immediate and long-term necessities, the attention to terror-related survivors differs according to the age profile of the victims.<sup>7</sup>

From tackling tuberculosis to nuclear accidents, our health system has evolved over the centuries to benefit large segments of the population. I had an opportunity to visit the Rokkasho village in Japan where a nuclear disaster health team has been put together both for clinical and research tasks, within a short time after the Fukushima Daiichi nuclear disaster. After the two world wars, it is unlikely that large-scale wars will occur. Strategists believe that the threats from terrorism will not end soon. The

pattern of terrorism has shifted since the 1970s. Terrorists do not work in isolation—a group or a network operates in tandem to create geopolitical instability. Their regular targets are non-combative, innocent and vulnerable citizens.<sup>10</sup> This calls for new learning in medical science. Developing a curriculum for 'terror medicine' and training specialist health workers to deal with the victims of terror acts at the field, hospital and community levels will require a concerted effort by regulatory bodies, health workers and policy-makers. Although the National Disaster Management Authority (NDMA) in India has developed guidelines for medical preparedness since 2007, the academic medical community has to initiate curriculum for learning and skill development.<sup>11</sup>

Is terror medicine 'dangerous research'? As Haggmann states: 'any work of value to terrorists will also be of value in countering terrorism'.<sup>2</sup> The two world wars taught us surgical techniques, wound healing practices, anaesthetic drugs and even cancer cure. Mustard gas, used as a chemical warfare weapon in the 1940s, was developed as a nitrogen mustard chemotherapy drug for treatment of lymphomas.<sup>12</sup> Medicine will always derive its strength from empiricism and observational studies. We do not know how many beneficial human values a biochemist or geneticist can derive from the properties of RDX or TATP explosives. While the focus of a health system in this context might be related to terror, its societal value extends far beyond. Had we not learnt about medical aspects of mass food poisoning or noxious gas disasters, the population would still be suffering from these maladies. These outbreaks are recurring all over the world and are contained by the trained and experienced medical professionals. The government and society will need to work in unison to mitigate the invisible side of terrorism. The medical learning and training process will require a global effort to improve the healthcare of citizens who are victims of terror attacks.

*Conflict of interest:* None declared

## REFERENCES

- Institute for Economics and Peace. *Global terrorism index 2015*. Available at <http://economicsandpeace.org/wp-content/uploads/2015/11/Global-Terrorism-Index-2015.pdf> (accessed on 12 Aug 2016).
- Haggmann M. Scientific publishers consider censoring 'dangerous' research. *Bull World Health Organ* 2003;**81**:308–9.
- Shapira SC, Cole LA. Terror medicine: Birth of a discipline. *J Homeland Secur Emerg Manage* 2006;**3**:9.
- Cole LA, Wagner K, Scott S, Connell ND, Cooper A, Kennedy CA, et al. Terror medicine as part of the medical school curriculum. *Front Public Health* 2014;**2**:138. doi: 10.3389/fpubh.2014.00138. eCollection 2014.
- Kitchenman A. Medical-school students gain insight into harsh reality of 'Terror Medicine'. Available at [www.njspotlight.com/stories/14/04/03/medical-school-students-gain-insight-into-harsh-reality-of-terror-medicine-issues](http://www.njspotlight.com/stories/14/04/03/medical-school-students-gain-insight-into-harsh-reality-of-terror-medicine-issues) (accessed on 18 Jan 2017).
- Weil YA, Peleg K, Givon A; Israeli Trauma Group, Mosheiff R. Musculoskeletal injuries in terrorist attacks—a comparison between the injuries sustained and those related to motor vehicle accidents, based on a national registry database. *Injury* 2008;**39**:1359–64. doi: 10.1016/j.injury.2008.02.008.
- Jaffe DH, Peleg K; Israel Trauma Group. Terror explosive injuries: A comparison of children, adolescents, and adults. *Ann Surg* 2010;**251**:138–43.
- Pedersen MJ, Gjerland A, Rund BR, Ekeberg Ø, Skogstad L. Emergency preparedness and role clarity among rescue workers during the terror attacks in Norway July 22, 2011. *PLoS One* 2016;**11**:e0156536. doi:10.1371/journal.pone.0156536.
- Shapira SC, Hammond JS, Cole LA (eds). *Essentials of terror medicine*. New York: Springer; 2009.
- Laqueur W. *Terrorism: A brief history*. 2008. Available at <http://iipdigital.usembassy.gov/st/english/publication/2008/05/20080522172730srenod0.6634027.html#axzz44N0N8SP2> (accessed on 16 Aug 2016).
- National Disaster Management Authority (NDMA) guidelines. Available at <http://ndma.gov.in/en/ndma-guidelines.html> (accessed on 18 Jan 2017).
- Gilman A. Symposium on advances in pharmacology resulting from war research: Therapeutic applications of chemical warfare agents. *Fed Proc* 1946;**5**:285–92.