

Boston Marathon Bombing: A Case Study

Introduction

In 2013, a bombing occurred at the Boston Marathon resulting in four deaths and over 250 injuries.¹ Since the Boston Marathon bombing, the Federal Bureau of Investigations (FBI) has altered the methods of prevention and response to terrorist threats and attacks.²

Facts of the Case

On April 15, 2013, brothers, Tamerlan Tsarnaev and Dzhokhar Tsarnaev, left two backpacks with pressure cooker bombs inside them near the finish line of the Boston Marathon. At 2:50 p.m., Tamerlan detonates the first bomb, resulting in one death. Roughly 12 seconds pass, when Dzhokhar detonates the second bomb resulting in two additional deaths.¹ The brothers leave the scene in a cab driven by a friend. On April 18th, surveillance photos of the brothers were released to the public by the FBI. The Tsarnaev brothers retrieve a Ruger P95 9mm semiautomatic handgun, additional ammunition, a machete, and five improvised explosive devices (IEDs).¹ They drive to the Massachusetts Institute of Technology where they shoot and kill a campus police officer. On April 19th at 12:43 a.m., police and the brothers exchange gunfire. Four IEDs were detonated at this time. Tamerlan was arrested. While escaping in a vehicle, Dzhokhar hit his brother resulting in life threatening injuries.¹ Tamerlan was pronounced dead at the hospital less than two hours later. On April 19th at 8:46 p.m., Dzhokhar was arrested. The Tsarnaev brothers were responsible for a total of four fatalities and over 250 injuries.¹ As of March 2014, according to the Commissioner of Insurance, the Boston Marathon bombing resulted in an estimated cost of \$24.9 million. Specifically, it cost over \$22 million in healthcare costs and almost \$2 million in building and property damages.³

Epidemiological Aspects of the Event

A major concern after the Boston Marathon bombing was the impact on mental health, including post-traumatic stress disorder (PTSD), specifically of youth and adolescent populations. In a cross-sectional study, researchers surveyed parents and caretakers who resided in areas around the attack on their children's experiences and psychosocial states within a week and within six months of the attack.⁴ The associations between the children's experiences and their psychosocial states were measured using odds ratios. The data were analyzed using linear regression models. The researchers found that children who attended the Boston Marathon were much more likely to experience PTSD than the children who did not attend. There was also a link between symptoms of PTSD and watching more than three hours of coverage of the bombing on television.⁴ There are potential sources of information and selection bias in this study. The parents and caretakers were surveyed, which may result in recall bias and social desirability bias. Also, the families (i.e., the parents, caregivers, and children) who participated may have volunteered for study due to heightened exposure from the attack. The authors did not discuss how they dealt with missing data.⁴

Management of the Event

The public health response to the Boston Marathon bombing was extremely effective. Normally, at marathons and sports events, there are healthcare workers at the event to provide necessary first aid. The healthcare workers at the Boston Marathon along with spectators were instrumental in preventing any additional loss of life.⁵ EMTs were immediately dispatched and were able to transport all of the injured to hospitals. Healthcare workers remained past their shifts and additional workers came into the hospitals to help with the injured. In the aftermath of 9/11, hospitals and healthcare workers have prepared to

Erin Waire
26 September 2022

receive high numbers of injured patients as a result of terrorist attacks.⁵ According to hospital records, there were no additional deaths at hospitals due to the bombing.⁶ No gaps in preparedness were identified with respect to the public health response. Healthcare workers mobilized effectively because of past exposures to war, terrorism, and natural disasters, either directly or indirectly through news sources.⁵ Some healthcare workers had prior experience working in war zones or providing care after natural disasters, such as the earthquake in Haiti. Those who did not have direct experiences have still witnessed the event and response on the news.⁵ This exposure aided in their response to the Boston Marathon bombing.⁵

Communications of the Event

The City of Boston and law enforcement attempted to keep the public away from the area of the bombing and the city by using mass communication notification systems. Law enforcement was also able to use these systems to collect photographs and video from those who witnessed the attack.⁷ On April 19th, social media and mass communication systems were used to notify the public of lockdowns and shelter in place orders for five cities and the surrounding areas. Further instructions for the lockdown were broadcasted to most electronic devices. Mass communication systems were also used to alert the public when the final suspect was captured by law enforcement.⁷ I think that public communications surrounding the Boston Marathon bombing were managed well. The use of mass communication notification systems seemed to efficiently and effectively communicate to the public updates pertaining to safety and the status of the investigation and search for the suspects.

Summary

The Boston Marathon bombing was a tragic terrorist attack that cost the lives of four individuals and injured hundreds more.¹ The Tsarnaev brothers, who were responsible for the bombing, were both apprehended.³ However, there have been lasting impacts on youth and adolescent populations as a result of experiencing the attack and manhunt.⁴ Research has been conducted to determine associations between the experience of the Boston Marathon bombing and mental health, such as PTSD. Despite all of the injuries from the attack, there were no additional deaths at hospitals, which demonstrate an effective public health response. As a result of the Boston Marathon bombing, Homeland Security and the FBI have been able to improve preventative and responsive measures to terrorist threats and attacks.²

Reference

1. O'Neill A. Tsarnaev trial: Timeline of the bombings, manhunt and aftermath. Cnn.com. Updated May 15, 2015. Accessed September 25, 2022. <https://www.cnn.com/2015/03/04/us/tsarnaev-trial-timeline>.
2. Anderson K. 5 years later, lessons learned after marathon bombing lead to changes. wcvb.com. Updated April 13, 2018. Accessed September 25, 2022. <https://www.wcvb.com/article/5-years-later-lessons-learned-after-marathon-bombing-lead-to-changes/19779452>.
3. Murphy JG. Study of Certain Insurance Claim Costs Resulting from The Events Occurring Between April 15-19, 2013 Associated with the Bombings at The 2013 Boston Marathon. mass.gov. Published March 2014. Accessed September 25, 2022. <https://www.mass.gov/doc/study-of-certain-insurance-claim-costs-resulting-from-the-events-occurring-between-april-15-19/download>.
4. Comer JS, Dantowitz A, Chou T, et al. Adjustment among area youth after the Boston Marathon bombing and subsequent manhunt. *Pediatrics*. 2014;134(1):7-14. doi:10.1542/peds.2013-4115
5. Gawande A. Why Boston's Hospitals were Ready. newyorker.com Published April 17, 2013. Accessed September 26, 2022. <https://www.newyorker.com/news/news-desk/why-bostons-hospitals-were-ready>.
6. Gates JD, Arabian S, Biddinger P, et al. The initial response to the Boston marathon bombing: lessons learned to prepare for the next disaster. *Ann Surg*. 2014;260(6):960-966. doi:10.1097/SLA.0000000000000914
7. Everbridge. Learning from Boston Crisis communication during terrorist attacks. Everbridge.com. Published April 2014. Accessed September 25, 2022. https://go.everbridge.com/rs/everbridge/images/WhitePaper_LearningFromBoston_April2014.pdf.