Case Study: Mina Stampede Hajj 2015

Mass gatherings (MGs) [1] are held for different occasions, including religious social, cultural, political, and sporting functions. It has been estimated that 70% of all human stampedes occur at spiritual assemblies. Crowd management at such events is therefore crucial and requires enormous skill, experience, and efficiency. The Hajj is one of the world's largest mass gathering [2], and it is expected that the number of pilgrims will increase by 10% each year. Most pilgrims at these events live in underdeveloped countries and are elderly, poor, and illiterate. For many, the Hajj is often their first international trip. The major concern regarding this mass gathering is that the entire Hajj event must be completed within a fixed schedule of only five days. The rituals are performed in a specific, predetermined sequence and follow a fixed route within a small geographic area of less than four square kilometers.

The Saudi government has involved religious scholars, administrators, immigration, and security staff, health officials, and other professional personnel to manage the Hajj [3]. Since 2006, these authorities have tried to improve the safety infrastructure, including its crowd control and management systems. Despite these efforts, numerous disasters including stampedes, fires, and bottlenecks have occurred every year. Although several scientific and technological developments have been applied during the past few years to assist in crowd management, a devastating stampede occurred in 2015.

The pilgrimage route between Mina, Arafat, and Muzdalifah posed multiple challenges for pilgrims. On 24 September 2015, during the annual hajj season, an accident occurred near the holy city of Mecca. It was the deadliest in the long history of hajj disasters. The event was widely reported as a stampede that occurred at a narrow Mina valley, three miles to the east of Mecca's Grand Mosque.

On the morning of this tragic event, hundreds of thousands of pilgrims were already on the move, streaming through the alleys, joining into larger groups on the side streets, and flowing into the main channels inbound toward the Jamarat Bridge [4]. Those channels were dense with pilgrims. At the same time, a heavy return flow of pilgrims who had already completed the ritual was moving through separate channels in the opposite direction, outbound to the tents in Mina. By design, those two flows - the

inbound and the outbound were never meant to mix. The heaviest inbound flow was down a channel called Street 204. Toward the front, the crowd compressed until people were walking at nearly chest-to-back density, which is inherently dangerous. The situation was critical: the crowd pressures were so great that people had lost all physical autonomy and were being propelled forward by unstoppable forces. In such situations, someone tripping, or fainting can have catastrophic consequences.

A short side road made a right-angle connection with Street 204 is called Street 223. It was supposed to be empty, but just after 9 A.M., a large throng of disoriented pilgrims descended, undeterred by the police. The crowd was propelled from behind into the midst of the mass of moving people on Street 204. The situation grew worse when several pilgrims fell. This turned a minor crowd collapse into a massive one that progressed upstream on both streets, in places resulting in victims stacked 10-high. The predominant cause of death was suffocation. It ended only after urgent calls to first responders brought the upstream flow to a halt. Tangled among the dead were more than a thousand injured, many of them moaning or calling out for help or water.

Emergency crews began to move in quickly but found access difficult because of the crowds. They were overwhelmed by the scale of the carnage they discovered. Despite this, 4,000 workers and 220 ambulances were sent to the scene of the stampede. It took ten hours for the evacuation to be completed. Much effort was expended on the removal of the dead - even as the injured lay largely unattended and continued to die. The Saudi government announced 769 people had died and over 805 people were injured. The government responded, promising a thorough and open investigation, which ended up with blaming the pilgrims for not following instructions.

Skills Assessment:

You will be asked to identify and describe acute event management, factors that could improve public health strategies and minimize the occurrence of acute events soon. These will include key elements like crowd management, stakeholders' coordination, resource allocation, implementation challenges, and surveillance.

Questions:

1. If you were a public health administrator, what strategies/steps would you implement ahead of such events to reduce the risk of crowd-related mortalities and injuries?

2. You are a public health specialist; who should be part of your investigation team?

3. Keeping in mind the susceptible population and possible challenges on pilgrimage routes, connecting Mina, Arafat, and Muzdalifah, what other potential safety risks posed by such large crowds are cause for ongoing public health concerns?

4. If you were a health policymaker, what would you include in your health emergency and preparedness plan for acute events?

5. As a health policymaker, who are the key stakeholders and how would you inform and engage them during a public health crisis? As a public professional, who should be the key actors in building partnership when preparing for eventualities of an acute event?

6. Briefly describe what could be the possible consequences for future Hajj seasons, if health and safety administrators do not make necessary changes.

References:

1. Case study extracted from: Rahman J, Thu M, Arshad N, Van der Putten M. Mass gatherings and public health: case studies from the Hajj to Mecca. Annals of global health. 2017 Mar 1;83(2):386-93. [Available online] Accessed on: August 20, 2021.
2. Memish ZA, Steffen R, White P, Dar O, Azhar EI, Sharma A, Zumla A. Mass gatherings medicine: public health issues arising from mass gathering religious and sporting events. The Lancet. 2019 May 18;393(10185):2073-84.
3. Yamin M. A framework for improved Hajj management and future research. ENTIC Bull. 2008 Aug 8;2(08s).
4. Shafi S, Booy R, Haworth E, Rashid H, Memish ZA. Hajj: health lessons for mass gatherings. Journal of infection and public health. 2008 Jan 1;1(1):27-32.