



## Beyond Panic: A Blueprint for Preventing Stampede & Crowd Mishaps.

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DOI: <https://doi.org/10.70333/ijeeks-04-10-028>

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Article Info: - Received : 07 August 2025

Accepted : 25 September 2025

Published : 30 September 2025



Stampede disasters are frequently misinterpreted as sudden outbreaks of panic among crowds, yet contemporary research demonstrates that they are primarily the result of systemic failures in crowd management, infrastructure design, governance, and communication. This literature review synthesizes Indian case studies of religious and public gatherings with global scholarship in crowd psychology, engineering, and public health to examine the underlying causes of crowd crush incidents. The analysis highlights recurring risk factors such as overcrowding, bottlenecks in entry and exit routes, inadequate safety planning, poor enforcement of regulations, and the rapid spread of rumours. Studies by Fruin, Still, Helbing, and Drury emphasize that crowd behaviour is generally rational and cooperative, shifting responsibility toward organizational and structural shortcomings. The review further stresses the importance of preventive strategies, including capacity regulation, improved venue design, real-time monitoring, public awareness programs, and legal accountability. By integrating interdisciplinary perspectives, the study frames stampedes as preventable disasters and proposes a comprehensive blueprint for safeguarding lives during mass gatherings.

**Keywords:** *Crowd Management, Infrastructure Design, Governance Accountability, Public Health Preparedness, Preventable Tragedies.*



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### 1. Introduction

Stampede disasters have often been misunderstood as sudden eruptions of panic among crowds. Contemporary scholarship, however, shows that these tragedies are not the result of irrational behaviours but of systemic failures in crowd management, infrastructure design, governance, and communication. Research from India and across the world reveals recurring patterns: inadequate capacity planning, poorly designed ingress and egress routes, weak

enforcement of safety regulations, and the absence of effective rumours control. By synthesizing case-based insights from Indian religious and cultural gatherings with global theoretical frameworks in crowd psychology, engineering, and public health, this literature review highlights the multifaceted nature of stampede risks. It also underscores the importance of policy reforms, awareness campaigns, and accountability measures. Together, these contributions provide a comprehensive understanding of stampedes as

preventable disasters and outline strategies to safeguard lives, affirming safety as both a logistical necessity and a moral responsibility.

## 2. Anatomy of a Stampede: Why and How It Happens

Stampedes are not sudden acts of irrationality but predictable outcomes of crowd dynamics under unsafe conditions. The anatomy of a stampede begins with **overcapacity**—when more people enter a venue than it can safely hold. As density rises beyond 6–8 persons per square meter, individuals lose the ability to move freely. Breathing becomes restricted, and compressive asphyxia sets in. Contrary to widespread belief, most victims are not trampled but suffocated.

The “why” lies in systemic failures: organizers underestimate turnout, authorities do not enforce safety standards, and infrastructure is not designed for mass dispersal. The “how” unfolds as a chain reaction: bottlenecks at gates, surges triggered by rumours or sudden events, and delayed emergency response. In **Hathras (2024)**, inadequate exits and poor stewarding led to 121 deaths. In **Seoul (2022)**, narrow alleys and a lack of police presence caused 159 fatalities. These tragedies prove that stampedes are **preventable disasters**, not inevitable outcomes of human behaviours.

## 3. Crowd Psychology and Behavioural Dynamics

Early theories often blamed stampedes on irrational panic. However, **Drury and Stott (2011)** challenge this “panic myth,” showing that crowd behaviour is often cooperative and rational. Their international review of public order policing emphasizes that mismanagement, not psychology alone, drives disasters. In India, **Mani and Kumar (2013)** highlight how rumour escalation—such as false alarms of fire or structural collapse—triggers surges. These findings align with global research, where misinformation has repeatedly worsened outcomes, as seen in **Seoul’s Halloween crush (2022)**. The literature converges on the need for effective communication systems—loudspeakers, multilingual signage, and verified social media—to guide crowds and counter misinformation. Crowd psychology research thus shifts the focus from blaming participants to improving management and communication.

## 4. Engineering and Infrastructure Perspectives

Engineering scholarship emphasizes the physical environment as a determinant of safety. **Fruin (1993)** found bottlenecks, narrow staircases, and locked gates as recurring causes of crowd crushes. His foundational work is still relevant in India, where temple staircases and railway platforms often become choke points. **Keith Still (2014)** formalized crowd science, introducing density thresholds and flow dynamics as measurable parameters. His frameworks allow organizers to calculate safe capacities and design venues accordingly. **Helbing and Mukerji (2012)** advanced this with mathematical modelling, showing how systemic failures in flow management lead to disasters. Indian scholarship echoes these concerns. **The International Journal of Law Management & Humanities (2025)** critiques inadequate infrastructure audits in Chennai, calling for mandatory safety redesigns. Together, engineering perspectives and Indian case studies highlight the urgent need for structural reforms—separate ingress and egress routes, wider exits, and phased dispersal systems.

## 5. Governance, Law, and Accountability

Governance failures are central to Indian scholarship. **Sharma, Golechha, and Mavalankar (2025)** argue that stampedes must be treated as a public health challenge, requiring integration into disaster management systems. Yet enforcement is still weak.

**India’s Disaster Management Act (2005)** categorizes stampedes as man-made disasters, compelling authorities to safeguard citizens. However, responses often are still reactive—ex gratia payments and judicial inquiries—rather than initiative-taking enforcement. The **Chennai study (2025)** highlights administrative lapses, weak licensing, and poor accountability. Globally, reforms after the **Hillsborough disaster (1989)** transformed UK stadiums into all-seater venues with strict policing protocols. Saudi Arabia introduced phased dispersal and redesigned routes after repeated Hajj tragedies. These examples show that legal accountability and initiative-taking governance can significantly reduce risks. Indian scholarship calls for similar reforms: steward ratios, real-time monitoring, and criminal liability for negligence.

## 6. Public Health and Emergency Preparedness

Stampedes are increasingly recognized as a public health issue. Victims often die from compressive asphyxia, requiring a specialized medical response. [Sharma et al. \(2025\)](#) emphasize the need for triage stations, emergency drills, and integration of crowd safety into health policy. Globally, disaster medicine literature highlights the importance of preparedness drills and rapid medical intervention. FIFA stadium guidelines and Hajj reforms include medical stations and trained personnel. In India, however, health system readiness at mass gatherings is still inconsistent. The literature suggests that public health integration is essential: medical staff must be trained in crowd-specific injuries, and emergency drills should be routine at major venues. This reframes stampedes not only as governance failures but also as health system challenges that require a coordinated response.

## 7. Public Education and Awareness

Education appears as a cornerstone of prevention. Most victims lack awareness of safe crowd behaviours—avoiding pushing, following one-way flows, and listening to instructions. Indian scholarship emphasizes the role of community drills, multilingual signage, and awareness campaigns through schools and religious institutions. Globally, Japan's disaster education programs and the UK stadium safety campaigns show how awareness reduces risk. Drury and Stott's work on crowd psychology reinforces that informed participants act rationally and cooperatively. The literature converges on the need for mass education campaigns that empower citizens rather than blame them. Awareness transforms vulnerable participants into responsible actors, contributing to collective safety.

## 8. Educating the Masses: Awareness as a Shield

Public education stands as one of the most powerful tools in preventing stampede tragedies. Many victims are caught unaware, lacking knowledge of basic crowd safety practices such as avoiding unnecessary pushing, following designated one-way flows, and paying attention to official instructions. By embedding awareness campaigns into schools, temples, mosques, churches, and community centers, society can cultivate a culture of crowd etiquette. Practical

demonstrations of safe dispersal methods, multilingual signage for diverse audiences, and community drills can further empower citizens to act responsibly in high-density situations.

Equally important is rumour control since misinformation often sparks sudden surges. Authorities must proactively use loudspeakers, SMS alerts, and verified social media channels to provide clear, calming communication during mass gatherings. International examples highlight the effectiveness of such measures: Japan's disaster education programs and the UK's stadium safety campaigns have significantly reduced risks by instilling preparedness and discipline among the public. For India, integrating crowd safety into civic education curricula and religious event planning offers a transformative path forward. Educating the masses is not about assigning blame but about empowerment—turning vulnerable participants into informed, responsible actors who collectively safeguard lives and ensure that large gatherings stay occasions of celebration rather than tragedy.

## 9. Government Measures: Legal Accountability and Policy Action

Stampedes are formally recognized as manufactured disasters under [India's Disaster Management Act of 2005](#). The Act, together with Article 21 of the Constitution, which guarantees the fundamental right to life, places a clear obligation on authorities to safeguard citizens during mass gatherings. In practice, however, government responses often stay limited to ex-gratia payments, judicial inquiries, and safety advisories issued after tragedies occur. While these measures provide immediate relief, they rarely address the deeper structural causes of crowd disasters. Stronger mechanisms are needed, including strict enforcement of event licensing, mandatory safety audits, and criminal liability for negligence when organizers or officials do not uphold safety standards. International experiences prove the effectiveness of initiative-taking reforms. Following the Hillsborough disaster in 1989, the United Kingdom mandated all-seater stadiums and introduced rigorous policing protocols, significantly reducing risks at sporting events. Similarly, Saudi Arabia redesigned routes and implemented phased dispersal systems after repeated Hajj stampedes. India must adopt comparable reforms by enforcing

steward-to-crowd ratio, mandating real-time monitoring technologies, and penalizing violations with legal consequences. Crucially, legal accountability must be paired with sustained public awareness campaigns, ensuring that both organizers and participants share responsibility. Government measures must evolve from reactive compensation to initiative-taking prevention, affirming safety as a non-negotiable priority.

## 10. Comparative Themes Across Scholarship

- Synthesizing Indian and global works reveals several themes:
- Systemic Negligence vs. Panic Myth – Both literatures reject irrational panic, emphasizing systemic failures.
- Governance and Accountability – Indian works stress administrative lapses; global studies highlight policing and legal reforms.
- Infrastructure and Design – Fruin and Still's engineering perspectives align with Indian calls for audits of temple and festival venues.
- Public Health Preparedness – Sharma et al. (2025) bring a health lens, echoing global emphasis on triage and drills.
- Predictive Tools – Helbing's modelling complements India's case-based lessons, offering initiative-taking monitoring strategies.

## 11. Major Stampedes in India

- **Mandhar Devi Temple, Maharashtra (2005):** Over 300 people died after overcrowding and fire rumours triggered chaos during a religious festival.
- **Chamunda Devi Temple, Jodhpur (2008):** 224 deaths during Navratri celebrations; bottleneck staircases and panic worsened the tragedy.
- **Kumbh Mela, Allahabad (2013):** 36 pilgrims died in a railway station crush, highlighting transport hub vulnerabilities.
- **Hathras, Uttar Pradesh (2024):** 121 deaths, mostly women, at a religious gathering due to poor crowd control and inadequate exits.
- **Tirupati Temple Stampede (January 2025):** Six devotees died, and over 20 were injured during Vaikunta Ekadasi token distribution, triggered by overcrowding

and poor crowd control at the Tirumala counters.

- **New Delhi Railway Station (Feb 2025):** 18 killed and 15 injured when pilgrims visiting Maha Kumbh were caught in a surge at platforms 14–15.
- **RCB Victory Parade, Bengaluru (Jun 2025):** 11 fans died in a stampede near Chinnaswamy Stadium during IPL celebrations.
- **Karur, Tamil Nadu (Sep 2025):** 40 killed and 50 injured at a political rally addressed by actor Vijay; congested roads and poor planning worsened the crush.
- **Pushpa 2 Film Screening Mishap (Nov–Dec 2025):** Multiple fans died, and several were injured in Andhra Pradesh and Hyderabad theatres as surging crowds overwhelmed capacity while trying to see actor Allu Arjun's film.

## 12. Major Global Stampedes

- **Mecca Tunnel Tragedy, Saudi Arabia (1990):** 1,426 pilgrims died in a tunnel crush during Hajj.
- **Mina Stampede, Saudi Arabia (2015):** Around 2,300–2,400 pilgrims killed during the stoning ritual at Hajj, the deadliest in history.
- **Phnom Penh Water Festival, Cambodia (2010):** 347 deaths on a crowded bridge during celebrations.
- **Seoul Halloween Crush, South Korea (2022):** 159 people died in the Itaewon district when crowds surged into a narrow alley.
- **Sanaa, Yemen (2024):** 85 killed and 322 injured during a charity event in the capital.
- **Kanjuruhan Stadium, Indonesia (2022):** Over 130 deaths after police used tear gas and locked gates trapped fans.
- **Hillsborough Disaster, UK (1989):** 97 football fans died due to overcrowding and poor policing at Sheffield stadium.

## 13. Conclusion

The literature consistently affirms that stampedes are preventable tragedies arising from systemic negligence rather than spontaneous panic. Indian scholarship offers case-based insights into governance failures at religious and

cultural gatherings, while global research contributes theoretical models, engineering solutions, and public health frameworks. Together, these perspectives create a comprehensive blueprint for prevention: enforcing strict capacity limits, redesigning infrastructure to end bottlenecks, integrating public health preparedness, educating citizens on safe crowd behaviours, and ensuring legal accountability. Strengthen this framework, scholars suggest adopting predictive technologies such as AI-based density monitoring, mandating regular safety audits for venues, and institutionalizing emergency drills across high-risk sites. Public awareness campaigns should be embedded in civic education, while organizers must be legally held responsible for lapses. International best practices—such as phased dispersal systems and steward-to-crowd ratios—can be adapted to India's unique contexts. Prevention, therefore, is both a governance responsibility and a moral imperative to protect lives.

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**Cite this article as:** Mrs.Ummu Aimen (2025). Beyond Panic: A Blueprint for Preventing Stampede & Crowd Mishaps. *International Journal of Emerging Knowledge Studies*. 4(9), pp.1369 – 1373.  
<https://doi.org/10.70333/ijeks-04-10-028>