

A Review of Development of Safety Management Module for Simhastha 2016 at Ujjain

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Abstract: India is a country of many religions, faiths, festivals and events. Population of India is around 1.32 billion, there are lot of mass gathering events being organized here at various levels involving large number of people. In India It has been observed from the past crowd disasters that having insufficient risk management strategies, one of this is Kumbh Mela. According to epic there was battle between devas and devils to capture the Urn (Kumbh) containing the nectar, drops of the precious liquid fell on four places – Haridwar, Prayag (Allahabad), Nashik and Ujjain. Kumbh Mela, is held once every twelve years at these four places and attracts millions of devotees. In Ujjain Simhastha Mela is held on the bank of River Kshipra Hence, Kshipra River is also named as Moksh Dayni. During the whole period near about 1.2 crores of devotees excluding Mahants, Saints, Mahamandleshwar were took holy dip in the river Kshipra. Therefore, it is essential to develop crowd management strategies to avoid casualties. These strategies is not only to provide the way for better crowd management, but also for determining suitability of the venue for an event, better route guidance to avoid congestion and finding the pinch points (high risk points). Finally, an overview of pedestrian simulation is presented that can help in developing more strategies for safer events.

Keywords: Simhastha, Crowd Management, Mass Gathering Event, Kshipra River, Stampede, Safety

1. Introduction

1.1 About Crowd Management:

Crowding is a phenomenon when large numbers of people gather at a particular area. In case of mass gathering people often gather in greater density, which poses a great challenge on infrastructural capacity (Lakshya and N. Bolia). This extreme high density may result in crowd disaster (stampede, trampling and suffocation). Stampede is particular instance of crowd disaster. Stampede is derived from a Mexican-Spanish word estampida which means 'uproar'. Stampede is defined as an act of mass impulse, which occurs in times of massive flight or massive craze response (Chukwuma and Kingsley 2014). Stampede may result in injury, structural damage and loss of material as well as life. Table 1.1 shows the past incidents of stampede which happened at various places.

Table 1.1: Past incidents of stampede (Curtesy: Lakshya and N. Bolia)

Year	Place	Reason	Casualties
1883	Victoria Hall (Britain)	Free toys distribution causes stampede	180
1989	Hillsborough Stadium (Britain)	Local police decided to open the stadium gates in already full	249
1990	Hajj (Mina, Mecca)	Overcrowding	1426
2008	Chamunda devi temple, Jodhpur, Rajasthan (India)	Stampede due to false rumors of bomb	249
2010	Phnom Penh (Cambodia)	Suspension bridge went way over capacity	450
2013	Ratangarh temple (India)	Stampede at bridge	115
2013	Kumbh Mela at Allahabad	Stampede at Railway Station	36
2015	Hajj (Mina, Mecca)	Overcrowding	1859

2016	Hajj (Mina, Mecca)	Stampede	1000
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Now when we look at each of the incidents, and their causes, we analyze that a small trigger can cause huge impact, many of the incidents were caused by rumors. Also, these incidents took place at the place where no. of people gathered in mass. Therefore, management is required for ensuring that overcrowding condition does not prevail. Managing crowd requires effective planning, risk assessment, and emergency procedures (Executive 2000). The objective of this study is to develop risk management strategies which will help in minimization of risk related to stampede. (Krausz and Bauckhage 2011).

1.2 About Simhastha

Simhastha is the great bathing festival of Ujjain. It is celebrated in a cycle of twelve years when Jupiter enters the Leo sign of the zodiac, known as Simha Rashi. Ceremonial bathing in the holy waters of Kshipra begin with the full moon day of Chaitra and continue in different intervals throughout the successive month of vaishakha culminating on the full moon day. Tradition calls for ten different factors to be located for the grand festival at Ujjain.

According to Puranas, the origin of the festival can be found in the ancient legend of samudra manthan. The legend tells of a battle between the Devas and Asuras for amrita, the drink of immortality. During samudra manthan, or churning of the ocean, amrita was produced and placed in a kumbha (pot). To prevent the Asuras from seizing the amrita, a divine carrier flew away with the pot. In one version of the legend, the carrier of the kumbha is the divine physician Dhanvantari, who stops at four places where the Kumbh Mela is celebrated. In other re-tellings, the carrier is Garuda, Indra or Mohini, who spills the amrita at four places. (Kama Maclean 2003)



Figure 1: Samudra Manthan

The Simhastha is special in Ujjain as it is the seat of divine Mahakal. Mahakaleshwar is one of the twelve jyotirlings in the country. Simhastha 2016 will begin on 22nd of April and will continue till 21st of May. Sants & Pilgrims of various sects from across the country assemble in Ujjain and mix with ordinary people and take their ritual dip in the holy water of Kshipra. Holy Dip scheduled during one month as shown in Table 1.2.

Table 1.2: Schedule Dates for Holy Dip during Simhastha 2016 (Curtesy: www.simhasthujjain.in/about-simhasth/snan-dates/)

S.No.	Holy Dip	Scheduled Dates (Day)
1	Shahi Snaan (Royal Holy Dip)	Chaitra Shukla 15, 22nd April, 2016 (Friday)
2	Pancheshani Yatra Start	Vaishakh Krishna 9, 1st May, 2016 (Sunday) to Vaishakh Krishna 30, 6th May, 2016 (Friday)
3	Vratparv Varuthini Ekadashi	Vaishakh Krishna 11, 3rd May, 2016 (Tuesday)
4	Vaishakh Krishna Amavasya	Vaishakh Krishna 30, 6th May, 2016 (Friday)
5	Akshaya Tritiya	Vaishakh Shukla 3, 09th May, 2016 (Monday)
6	Shankracharya Jayanti	Vaishakh Shukla 5, 11th May, 2016 (Wednesday)
7	Vrishabh Sankranti	Vaishakh Shukla 9, 15th May, 2016 (Sunday)
8	Mohini Ekadashi	Vaishakh Shukla 11, 17th May, 2016 (Tuesday)
9	Pradosh	Vaishakh Shukla 13, 19th May, 2016 (Thursday)
10	Nrusihn Jayanti	Vaishakh Shukla 14, 20th May, 2016 (Friday)
11	Pramukh Shahi Snaan	Vaishakh Shukla 15, 21st May, 2016 (Saturday)

2. Simhasth Kumbh Mahaparv Pre Preparations

This section provides details about role of different departments & work done in their respective fields. Ujjain development Authority is the leading authority under which following department works for simhasth.

- Public Work Department (PWD)
- Water Resource department

2.1 Public Work Department:

Public Works Department (PWD) had taken projects of road and bridge construction worth Rs 720 crore in which Rs.549 crore for road construction and Rs 171 crore for building of 11 bridges. They construct four railway-over bridges to avoid traffic during simhasth. They also construct culvert to connecting Ramghat and Dutt Akhara at the height up to 1.5 feet. The height of the culvert was also increased so that a motor boat can pass under it. New road also constructed from Lalpur to Udyogpuri Dhatravda as per the master plan. Railway over bridge was made for railway crossing located at Nagda-Khachrod road. Also construct road from Bahlola to Khachrod Chamunda Mata. It will benefit around 50 villages of the area. The railway over bridge being built on Chintaman and Badnagar road with the cost of Rs 24 crore. Hariphatak over bridge toward Indoregate has been widened to 36 meter. There would be no problem for heavy vehicles to take turn on the bridge. Ghats were constructed near Mangalnath temple on Kshipra. The department has planned to beautify the ghats on Kshipra.

2.2 Water Resource Department

33 MGD water will be required for Simhasth Kumbh Mahaparv. Water Resources Department were planned to take 15 works whose were costing Rs 157.57 crore for ensuing Simhastha, most of the work includes construction & beautification of Ghats and their strengthening on the banks of Kshipra River. Due to these works, bath capacity increased. Besides, length of Bhookhi Mata Ghat from Lalpur Railway Bridge is being increased from 540 meters to 571 meters for Simhastha. Work on a nullah crossing bridge was also being undertaken from 310 meters to 323 meters of 750 meter length from Bhookhi Mata Mandir upto Dutt Akhada

2.3 Ghat Preparation

2.3.1 Ram Ghat

Along the banks of River Kshipra, many bathing ghats are located. The Shri Ram Ghat, also known as Ram Ghat is the most ancient bathing ghat and was very popularly visited during the Kumbh Mela. It is located near the Harsiddhi Temple. According to Hindu mythology Lord Ram done

bone immersion (Asthi Visarjan) of his father Maharaja Dashrath in Ram ghat in holy river Kshipra during his journey to forest.

2.3.2 Narsingh Ghat

This is one of the ancient ghat situated on the banks of River Kshipra, on the left side of this ghat lies the famous Kark Raj Temple opposite Bhukumata Temple. The specialty of this temple is that it is located on the Tropic of Cancer passing through Ujjain.

2.3.3 Gau Ghat

Gau ghat is situated near Ram Ghat & Narsingh Ghat. It is said that bathing on this ghat gives saintly of 1.25 lakhs gau daan

2.3.4 Dutt Akhada

This ghat is situated on the bank of River Kshipra, opposite to Ram ghat. It is said that Shiv panti sadhus takes snan on this ghat. The Akhada is located on the place where Lord Dattatreya in Treta Yuga taught his disciples. AdiGuru Shankaracharya re-established the Akhada with the padukas of Lord Dattatreya about 2500 years ago. The main aim of the establishment is protection of Sanatana Dharma. Around 1926, the Akhara was rebuilt in the condition seen today by SandhyaPuriji Maharaj. At different times in previous millenia, it was also called Juna Akhara.

2.3.5 Triveni Ghat

According to ancient mythology Triveni is the sangam of three rivers that is Kshipra river, Khan river and invisible Saraswati river therefore, it is called Triveni sangam and ghat constructed on this river is called Triveni ghat. The temple of Navagraha, the nine planets, on the Triveni ghat of Kshipra is a prominent centre of attraction for the pilgrims.

2.3.6 Mangalnath Ghat

This ghat is located near the bridge of the auspicious Mangalnath Temple. As per Matsya Purana Mangalnath is a birth place of mars which is situated on Kark intersection Dedicated to Lord Shiva.

2.3.7 Siddhwat Ghat

Siddhwat Ghat is situated near Siddhawat Temple, According to one tradition, Parvati is believed to have performed her penance here.

2.3.8 Rinmukteshwar Ghat

This Ghat is situated near Rinmukteshwar Temple near Adarsh Nagar. Here an ancient statue of Lord Shiva's main host "Virbhadr" and under old tree Rinmukteshwar's a form of Lord Shiva lingam and Ganesh statue are established. The significance of worshipping the temple is on Saturdays.

2.3.9 Bhukumata Ghat

This ghat is situated on the famous Bhukumata Temple. Behind this temple story of king Vikramaditya is related which says whenever who became king of Ujjain Devi takes human sacrifice (manav Bali) to stop this practice king makes a fake body of khoya once she eat that khoya she liked a lot & told him to wish anything from her then King

wished her to go out from his state & never take Manav bali, after this incident her name was Bhuki Mata.

2.3.10 Chintaman Ghat

This ghat is situated on the River Kshipra near famous Chintaman Ganesh Temple.

2.3.11 Prashanti Dham Ghat

This Ghat is situated in the atrium of Prashanti Dham Temple & towards the right coast of Kshipra river.

2.3.12 Sunheri Ghat

This ghat is situated on the right bank of River Kshipra, which lies towards the right side of a small lane on Ujjain Badnagar Road.

3. Detail of Akharas

Akhara basically means a wrestling area, Saints, Yogis and Vairagis belongs to different Akhara according to the God they worship. Those who worship Lord Vishnu comes under Vairagi or Vaishnava Akhara, followers of Lord Shiva comes under Shaiva Akhara and the ones who worship Lord Brahma comes under Kapalwasis It is said that Akharas started in 8th century AD. Firstly, Adi Shankaracharya established the akhara and further it is divided in seven number, they are Mahanirvani, Niranjani, Juna, Atal, Avahan, Agni and Anand Akhara. They were formed to strengthen the Hindu religion and unify devotees who practice various hindu rituals, customs and beliefs. Among all the Juna Akhara is the biggest akhara in terms of number of Saints. Different Akharas named as following:

- 1) Shri Panchdashnaam Juna Akhara
- 2) Shri Panchayati Taponidhi Akhara
- 3) Shri Panchayati Anand Akhara
- 4) Shri Panchdashnaami Avahan Akhara
- 5) Shri Panch Agni Akhara
- 6) Shri Panchayati Mahanirvani Akhara
- 7) Shri Panch Atal Akhara
- 8) Udasin Akhare
 - Shri Panchayati Bada Udasin Akhara
 - Shri Panchayati Udasin Naya Akhara
- 9) Shri Panchayati Nirmal Akhara
- 10) Bairagi Akhade
 - Ramadal Vaishnav
 - Shri Panchramanandaye
 - Nirvani Ani Akhara
- 11) Shri Panch Digambar Ani Akhara
- 12) Shri Panchramanandiya Nirmohi Ani Akhara

4. Simhasth 2016 Snans Crowd Counting:

Simhastha (Kumbh) mela, one of the largest congregations of Hindus, began in Ujjain on April 22, 2016 with the arrival of Juna Akhara for a royal bath on the banks of Kshipra River at 5 am at Datta Akhara. All the 13 Akharas of seers will take bath one after another for which elaborate arrangements were made along the banks of Kshipra River. Some 11 lakh faithful have reached this ancient city for the First snan.

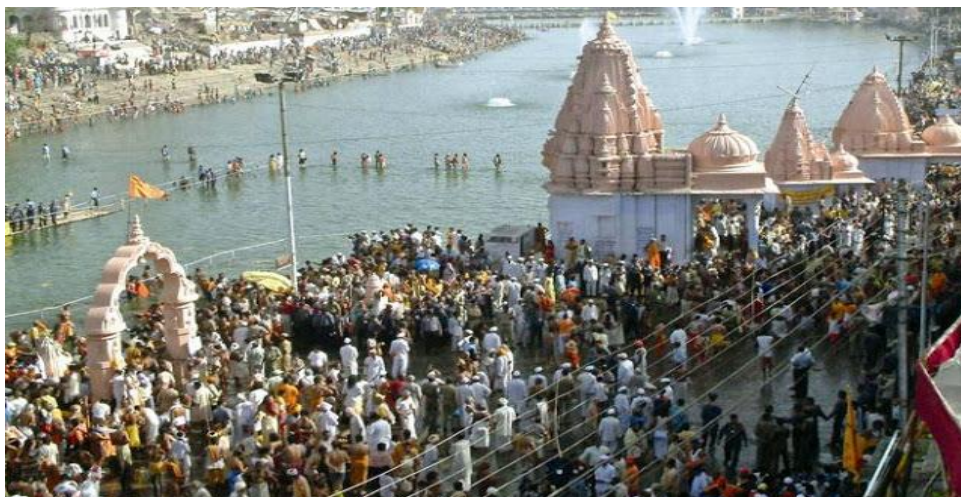


Figure 2: Courtesy: <http://www.simhasthujain.in>

The second 'Shahi Snan' (Royal Bath) held on 9 May 2016 began with Naga Babas of Juna Akhara who gathered into the holy Kshipra River chanting Har Har Mahadev. A sea of devotees has congregated in Ujjain to take part in the snan that has become all the more auspicious as it coincide with Akshay Tritiya. According to the government, some 25 lakh devotees reached Ujjain for Holy Dip.

And Third shahi snan held on 21 May 2016 about 75 lakh devotees reached this ancient city for the Holy Dip in the River Kshipra.

5. Crowd Management, Intervention, and Control Strategies

The intervention strategies agencies utilize will depend upon available resources and the totality of the circumstances. Strategies include containment, control, communication, tactical information, coordination and response. Planning for crowd management incidents should include consideration of contingencies Crowd management, intervention, and control strategies and tactical considerations may include:

- Establishing contact with the crowd
- Gaining verbal compliance
- Supporting and facilitating First Amendment activities
- Developing a traffic management and/or control plan
- Using crowd control and dispersal methods
- Protecting critical facilities
- Providing a high-visibility law enforcement presence

5.1 Planning for Crowd management strategy and arrangements

For Simhasth 2016, Ujjain Government Authority planned some strategies for Crowd Management, Risk Analysis Safety and Security Measures. They also made strategies for Emergency Planning and Transportation and Traffic Management.

The Madhya Pradesh government had installed app-based panic buttons, close circuit cameras and stationed 35,000 personnel for the month-long Simhastha Kumbh in Ujjain to prevent a repeat of the Kerala temple fire. The simhasth administration had provided its security plan to reduce response time if a tragedy strikes. For crowd management,

they had head count cameras in place, more than 550 CCTV cameras, face recognition cameras and automatic number plate recognition cameras have been installed in 134 locations. In Emergency of fire blaze Police had integrated fire stations with traffic control. With head count cameras, it was easy to manage flow of crowd in different zone and divert them to other locations. Mela authority developed different stations like 25 quick response teams, 50 Dial 100 first-response vehicles, 20 bomb detection and disposal squads and 50 sniffer dogs. Also expanded ghats and installed barricades, the mela administration had also created a panic button on its mobile app. Tapping this button will directly alert the central control. Administration also established 10,000 electric poles that are uniquely numbered and connected to central control room through GIS mapping, if an alarm is raised from any place, control room able to pin point the location of the alarm.

6. Conclusion

Simhasth Mela, the name itself projects the belief and vibrant traditions in India. With the religious sentiments, lakhs of devotees from different sectors gathered in the Ujjain City between the periods 22 April to 21 May 2016 and took holy dip in the River Kshipra. In the presence of proper planning, a successful event can be guaranteed. This Kumbh had implemented many modern techniques like CCTV, GPS, app-based panic buttons, effective fire control system, barricades, electric poles that are uniquely numbered, Crowd management system etc. This paper has covers the overall effects on environment due to conductance of Maha Kumbh by data analysis and few technological advancements.. It is very essential to establish excellent coordination and communication system between different organizing groups. A proper understanding, planning, timely risk assessment and proper resource utilization can make any event a successful one. With all advancement, proper crowd management Simhasth 2016 made a successful event without any causality due to Stampede.

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