ORIGINAL RESEARCH

Hajj and Umrah management during COVID-19

Sarah Basahel[1] · **Abdullah Alsabban**[1] · **Mohammad Yamin**[1]

Abstract COVID-19 has changed the way crowded events are organised. Every year thousands of crowded events are organised around the globe. Majority of the crowded events are religious in nature, with sensitivities and emotions attached. Organisation of crowded events, especially during a pandemic like COVID-19, poses a considerable challenge. To contain the spread of a human to human contagious disease, several restrictions, including wearing face masks, maintain social distancing, and adhering to regular cleaning and sanitisation, are critical. These restrictions stress the need for the event organisers, including the local or central government, to overhaul policies and practices about crowd management during a pandemic. Some crowded events are regular, whereas the others are occasional, which could be spontaneous such as a protest march, a political rally or a funeral procession. Controlling spontaneous crowded events can be quite difficult, especially during a crisis like COVID-19 pandemic. In this article, we shall review several crowded events which have taken place during the ongoing pandemic and investigate their impact and contribution in the spreading or containing COVID-19. We shall also provide a framework for effectively organising crowded events during the ongoing and future pandemics.

✉ Mohammad Yamin
  myamin@kau.edu.sa

  Sarah Basahel
  sbbasahel@kau.edu.sa

  Abdullah Alsabban
  asalsabban@kau.edu.sa

1 Faculty of Economics and Administration, King Abdulaziz University, Jeddah, Saudi Arabia

1 Introduction

Organisation of crowded events in general, is a complex management exercise. But to organise such an event during a crisis or pandemic requiring social distancing and other restrictions would involve different sets of skills and rules, which may be challenging to implement. Currently we are passing through the COVID-19 pandemic [1–4], which started in 2019 in China. So far, over two hundred million people have been infected with the virus, and over four million have lost their lives. Global efforts to check the spread of the virus has so far received mixed success. Most of the countries have witnessed multiple waves of the virus. Sadly, since its start, several variants of COVID-19 have emerged. Currently, Delta variant, which was first detected in India (Reference), is creating havoc in many countries. The World Health Organisation (WHO) has approved several vaccines for emergency use, but their effectiveness is questionable. No one knows about any successful treatment of the COVID-19 disease. However, certain measures are universally agreed and have been proven effective to contain the COVID-19 virus. These include social distancing, limiting exposure, wearing masks in public places, regular clearing, especially hands, and sensitisation.

Crowded event organisations during a pandemic must follow and implement universally accepted precautions and norms. Indeed, during the ongoing coronavirus pandemic, we have witnessed many events organised in accordance with the requirements of the pandemic. However, unfortunately, we have also witnessed several other intensely crowded events which did not follow the norms. Some of

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these events have turned out to be super spreader of coronavirus into many communities and neighbourhoods. On the other hand, some events have given the go-ahead in the hope of gaining political advantage. Many events could have been cancelled altogether or organised with mandatory restrictions. The success or failure of these events must be attributed to the country's management and the governing administration. When a government does something wrong, it usually goes unpunished.

Organising Al-Hajj Al-Akbar (major hajj) and Al-Hajj Al-Asghar (minor hajj) during pandemic have adhered to all the required norms, which form some examples of perfect management of crowded events during COVID-19. Al-Hajj Al-Akbar is an annual pilgrimage to Makkah (Mecca), and Al-Hajj Al-Asghar, popularly known as Umrah, is an ongoing pilgrimage to Makkah, which takes place during all months and days of every year. In normal times, about ten million people travel from different parts of the world to participate in these pilgrimages. During the pandemic, however, the story is quite different. In the rest of the article, both Al-Hajj Al-Akbar will be referred to simply as the Hajj and Al-Hajj Al-Asghar as the Umrah. More details of Hajj and Umrah can be found in [5, 6].

In this article, we shall analyse various aspects of the Hajj in normal times and during the ongoing pandemic. In particular, we shall explore the involvement of modern technology in managing these events. We shall also provide some suggestions to improve the management of Hajj during the pandemic. In doing so, we shall briefly discuss the history of the Hajj, its rituals, timing and places of its organisation.

2 Background

Here we shall provide information about critical activities of the Hajj and Umrah.

2.1 The Hajj and Umrah

The Hajj, an annual pilgrimage to Makkah, takes place during 8–13 Dhu'l-Hijjah, the 12th and last month of Hijri (Islamic or Arabic) calendar. The Hijri calendar is lunar, meaning any month would have either twenty-nine or thirty days. So, each lunation is approximately twenty-nine and half days [7]. A lunar year, is 354 days, 8 h, 48 min, 34 s (354.36707 days). In other word, Hijri year is shorter by 11 or 12 days as compared to Gregorian (solar) calendar, and hence the hajj season shifts by 11 or 12 days each year. The Hijri or Islamic calendar is a lunar calendar, and so dung the Hajj would pass through all seasons of a solar year over the course of a 33–34 lunar-year cycle [7].

Makkah is an ancient city of the Kingdom of Saudi Arabia (KSA), which houses Ka'bah, which currently is a cuboid with 36.2 feet as its width and 43 height, as is shown in Fig. 1 [8]. Ka'bah is the centre of pilgrimages of the Hajj and Umrah. According to Qur'an, Prophet Ibrahim, together with his son Prophet Ismaa'eel (Ishmael), raised the foundations of Ka'bah around 2130 BCE [9]. That led to the habitation of what we now know as Makkah. Prophet Muhammed (ﷺ) was also born in Makkah in 570 CE. During the Hajj and Umrah, tawaf (circumambulation) is one of the obligatory and most important ritual. At peak times, tens of thousands of pilgrims perform tawaf at the same time. Many researchers have extensively studied different aspects of Hajj and Umrah. A compressive account of Hajj and Umrah, and their management issues can be found in [5].

2.2 Crowded events of Hajj and Umrah

Hajj has several intense crowding rituals which require en mass participation. Let us look at only three of them.

Assembly in Arafat. Standing in Arafat valley, shown in Fig. 2 [10], on nineth Dhu'l-Hijjah is obligatory, and most crowded ritual of the Hajj. It requires all pilgrims to travel to Arafat and spend some part of the day light. Missing this ritual amounts to missing the Hajj. During the Hajj in 2012 [5], about four million people had gathered there, making the place very crowdie. After the sunset, all pilgrims must depart to spend the night in Muzdalifah, which now is a small town of Makkah and Arafat.

Stoning the Jamaraat. Stoning, known as Rami, the Jamaraat (three symbolic stations of Satan) on 9th, 10th and 12th Dhu'l-Hijjah is also an obligatory ritual of the Hajj. The Jamaraat and roads leading to them can be very
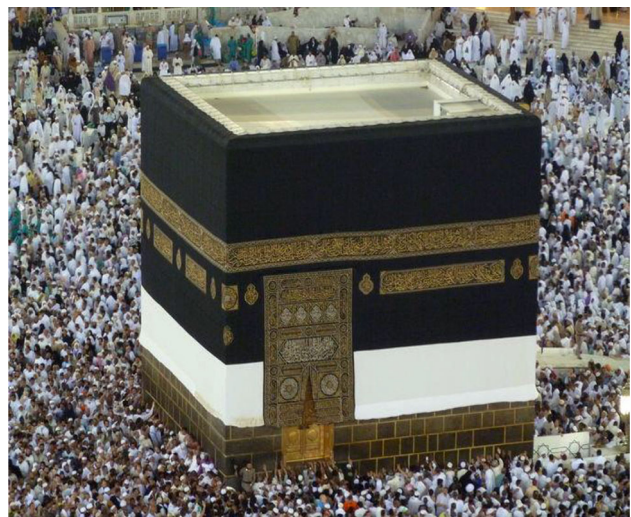

Fig. 1 Ka'bah in grand mosque in Makkah

Fig. 2 Arafat

crowded (Fig. 3) [11], and have witnessed a number of stampedes (reference) including one in 2015.

Tawaf. Walking seven times around Ka'bah, known as tawaf (Fig. 1), is also an obligatory ritual of the Hajj and Umrah. The tawaf can sometimes become intensely crowded. During the heat of the Saudi Arabian summer months, tawaf is an arduous ritual to perform. Some people can get heatstroke during the intense crowding on hot days.

Many researchers have studied different aspects of crowded events, and in particular those of the Hajj and Umrah. For details, refer to [5, 12, 13].

3 Management of Hajj and Umrah under COVID-19 Restriction

In March 2020, the WHO declared COVID-19 as a global pandemic, which prompted lockdown in Saudi Arabia and suspension of Umrah and normal congregation prayers in all mosques including the grand mosque. The mosques were reopened in October 2020, but with COVID-19 restrictions.

Fig. 3 Jamaraat Bridge

3.1 The web apps

During the ongoing pandemic, entry to the grand mosque is allowed only through online permits. In addition, every citizen is mandated to subscribe to government-sponsored web Apps to display their health status. Tawakkalna, as shown in Fig. 4 [14], is the kingdom's national health app. It was developed by the Saudi Data and Artificial Intelligence, which facilitates the processing of permits for pilgrims, maintains contact tracing, and provides a range of other functionalities, including the health status of the individual users. By 5 September 2021, twenty three million Saudi residents had subscribed Another App, which can be accessed in seventy five countries. Eatmarna, also facilitates the booking of Umrah and other pilgrimages to the grand mosque. Yet another App, Sehaty [15], processes appointments for vaccinations, coronavirus test, and other health check-ups and displays health records.

3.2 Umrah and access to the grand mosque

Umrah is a journey to the grand mosque in Makkah, where a set of rituals are carried out. The most important ritual is the tawaf of Ka'ba. It takes less than 3 h to complete all rituals of Umrah. In October 2020, the government of Saudi Arabia reopened the entry to the grand mosque and entire mosques, including the performance of Umrah. However, Umrah is still being staged under the same

Fig. 4 Tawakkalna App

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conditions. The Saudi Arabian Ministry of Hajj regulates it through permits.

During the pandemic, the Umrah management devised six shifts of two and half thousand to three thousand pilgrims in each of them. Permits are mandatory and issued only to those who are vaccinated. Health checks at different points are carried out. Wearing masks is mandatory and social distancing is enforced strictly. During the entire journey and span of stay of pilgrims in the grand mosque, strict social distancing, wearing of face masks, use of sanitization, and other related conditions are mandatory, which are supervised by the ground staff physically. Umrah under these policies has turned out to be very easy, smooth and has not posed any serious health risks.

Fig. 5 Tawaf during Hajj 2020

Umrah permits in 2020 were also offered to pilgrims of selected foreign counties but were later stopped for health reasons. However, Umrah permits have again been issued in August 2021 for foreigners who can comply with underlying conditions. This is also producing very encouraging results.

3.3 Management of Hajj during Covid-19

The Hajj is a journey and set of very complex rituals to be performed in and around Makkah. In normal circumstances, two to three million pilgrims from different countries take part in the Hajj. In view of the coronavirus pandemic, the Hajj management decided to admit only ten thousand pilgrims in 2020 Hajj. By permitting a much fewer pilgrims, coupled with all the safeguards of coronavirus, the Hajj in 2020 was organised very successfully. Figure 5 [16] shows tawaf during Hajj 2020, which has less than two thousand pilgrims as compared to tens of thousands in earlier years.

In 2021, the hajj management decided to permit sixty thousand local pilgrims for the Hajj 2021. As discussed earlier, a normal tawaf can have more than fifty thousand people. As usual, it turned out to be a very convenient and successful hajj with all precautions and restrictions.

Table 1 Guidelines for organising crowded events	
	Planning and approval
	How many people can comply with social distancing?
	Arrangement for health compliance are adequate
	Social and recreational facilities are adequate, including parking and safe passage
	Individual permit
	Is the person wearing the plastic form of the permit with RFID tag attached
	Is the person fully vaccinated?
	Does the person pledge to comply with face mask and social distancing?
	Has the person subscribed to contact tracing and other apps, approved by the Regulatory authority
	Entry requirements
	Check permit and health status
	Check temperature and other symptoms
	A negative PCR within 72 h of the entry
	Provide guidelines leaflet
	Monitoring
	Monitor crowd movement on CCTV
	Provide adequate number of field monitors to enforce restrictions
	Provide shelter, medical and emergency help for the needy
	Report violations of required restrictions to the authorities

4 Discussion

As we can see, the Hajj and Umrah management during Covid-19 has been very successful and has not contributed to spread of the virus. The international community can learn from the experience of management of these events. Learning from the experience of Hajj and Umrah management during Covid-19, it is logical to draw some guidelines for organisation of crowded events during a crisis like the pandemic. Here we gather guidelines to organise crowded events during a pandemic.

As a starting point, all events must be approved by the Regulatory body of the country/region, who should check health, social, and cultural environment and space before granting the approval. In addition, the area of the event should be inspected and measured and the maximum number of the participants at any given time should be stipulated. Audio visual systems for displaying guidelines and warnings should be checked. The permits for participation should be issued to those who have an acceptable level of vaccination and pledge to comply with the health and crowding regulations, including contact tracing and other relevant apps. The permit should be visible to organisers at all times and be RFID enabled for tracing purposes. These and other aspects of crowded event organisation are collected in Table 1.

5 Conclusions

Proper organisation of crowded events is extremely important to check the spread of virus. Unfortunately, many religious, social and recreational events have contributed to the spike in the cases of coronavirus in many countries. Religion or recreation is not above the safety of people. If deemed dangerous to organise an event, be it religious or political, it must be cancelled or scaled down to an acceptable level. Hajj and Umrah organisation has provided the international community with a way forward to deal with sensitivities of religious event organisations.

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