

# The Trauma Challenges in the Arbaeen Ceremony

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## Abstract

**Introduction:** Trauma injuries in overcrowding ceremonies are frequent. This study assessed the health system's challenges in preventing trauma incidents at the Arbaeen ceremony.

**Methods:** This qualitative research from June 2021 to January 2022 included ten experts: three trauma professors, four crisis management professors, and three emergency medicine professors. Semi-structured interviews were used for the assessment of data. Challenges and suggestions regarding trauma prevention in the Arbaeen pilgrimage were coded and extracted.

**Results:** The findings related to the factors causing trauma in the Arbaeen ceremony were identified in four themes: management and policy-making, education, resort locations, and traffic. These themes were extracted from a total of 71 codes. The education content included general education, specialized health education, and education in spiritual health. The traffic issues included three subcategories in Iran, Iraq, and around the holy shrines, and resorts and settlements with three subcategories of processions, places of rest, and medical centers.

**Conclusion:** Pilgrim-oriented education, planning, and control of other challenges can reduce threats into opportunities and improve participants' health in the Arbaeen community.

**Keywords:** Arbaeen, Pilgrimage, Trauma.

## Introduction

Trauma is the fourth cause of death worldwide, the first cause in the first four decades of life, and the most common cause for all people of different ages<sup>1-3</sup>. Thousands of deaths and millions of injuries occur annually due to various traumas. However, most lives lost in our country are due to trauma<sup>4,5</sup>. Trauma has a wide range and includes musculoskeletal pain, which is the most common, to trauma caused by crowding<sup>6</sup>. Special religious and cultural occasions are held in the world<sup>4</sup>. Most of these occasions, including royal celebrations, rallies in protest of specific laws and regulations, sports, and religious and cultural gatherings, lead to overcrowding in most cases<sup>7-8</sup>. There

is always the risk of disaster incidence in mass gatherings because these gatherings, by their nature, can potentially turn into events with high casualties<sup>7</sup>. Over the past years, Hajj has faced several disasters due to fires at the campsite, crowded tunnels, cranes falling, and people being stampede due to overcrowding<sup>4, 8-12</sup>. In 2015, 2431 people died in Hajj due to trauma caused by crowding<sup>11</sup>. Arbaeen pilgrimage in Iraq is 80 km from Najaf to Karbala city 40 days after the day of Ashura (Ashura happens annually on the 10th of Muharram, the first month of the Islamic calendar, as it honors the martyrs of Husayn ibn Ali (a grandson of prophet Muhammad)), with a population of about 20 million people per year, which is unique among all the

pilgrimage gatherings in the world <sup>11</sup>. In a study, the prevalence of referrals from trauma to medical centers during Arbaeen 2016 was 23.9% <sup>9</sup>. Also, in another study, it was shown that out of 144,000 patients referred to Ilam hospitals during Arbaeen 2019, 1517 patients, due to various traumas, were referred to the medical centers <sup>10</sup>.

Studies showed strategies to deal with traumatic incidents among Arbaeen pilgrims or reduce traumas, including education, awareness of pilgrims, treatment facilities and infrastructure, organizational resources, and cooperation of different organizations <sup>2,3</sup>.

This present study investigated the challenges in the Arbaeen ceremony against traumatic events.

## Methods

### Study protocol

This study was conducted with a qualitative method and a phenomenological approach. Phenomenological research is derived from the inductive descriptive method. This research was conducted from October 1400 to May 1401. The participants in this research were ten experts, including three trauma professors, four crisis management professors, and three emergency medicine specialists. The age experts were between 40 and 61 years old. The inclusion criteria included the voluntary willingness to participate in this study and having experience participating in the Arbaeen ceremony. The ethical committee of Baqiyatallah University of medical sciences confirmed this study by IR.BMSU.REC.1399.290 code.

The sampling method was purposive and selective sampling. In this method, the samples were selected based on information-rich cases for in-depth study. Experts were selected because they knew the research subject. In the first stage, we asked experts to express the problems related to traumas in the Arbaeen ceremony and provide an operational definition. Sampling continued without any test or multiple, from among the people directly related to the research problem until reaching information saturation.

In this research, an unstructured interview method was used to collect information. In this method, the researcher collects data through verbal communication with the samples, asks his questions, and receives and records their answers. Instead, he starts by asking general questions and gradually asks the following questions based on the interviewee's answers; therefore,

the researcher started the interview with the main question, "What is your experience about traumatic events during the Arbaeen ceremony?" It started, and the following questions were formed based on the participants' answers. The interviews were face-to-face, in-depth, and unstructured; also, during the interview, questions such as "Can you explain more" or "This is what you mean" were used to guide the interview. The interviews were conducted with minimum guidance of the participants for 30 to 45 minutes, during which information saturation was achieved.

After conducting interviews, extracting information, and coding, the researcher referred to the samples again to make the data reliable and checked their agreement with his perception of the material. The evaluation of the samples from the copied material was confirmed, and possible essential contents were discussed and clarified. Through this, agreement and approval of the samples were obtained.

After being at the desired place, the researcher conducted a face-to-face, in-depth, unstructured interview with open-ended questions while establishing clear communication and assuring relative compliance with ethical considerations. At the end of each interview, the researcher, while thanking the participants, announced the possibility of meeting them again or calling them to complete or clarify the interviews and obtain their consent.

Colaizzi's 7-step method was used to analyze the data. In the first stage of Colaizzi, the recorded interviews were listened to several times and written down word by word. The results were compared several times with the recorded voice and carefully examined. In the second stage of Colaizzi, we returned to each statement to extract meaningful information. The basic sentences related to the studied phenomenon were identified by underlining. This stage is known as the extraction of "important statements." In the third stage, the underlying meaning of each critical statement related to the studied phenomenon, known as "formulated meaning," was extracted. In the fourth stage of Colaizzi, after repeatedly rereading the codes and repeating the third stage, the researcher put the formulated concepts into thematic categories and clusters and continued the work until reaching the theme categories or the main topics. In the fifth stage of Colaizzi, the results were combined to describe the phenomenon under study comprehensively. This step explains the connections

between themes and how they were formed. In the sixth stage, a comprehensive description of the phenomenon under study was compiled as clearly and unambiguously as possible. In the seventh stage, the findings were referred to the study participants for validation, and they gave their opinions about the harmony found. They expressed their experiences to the researcher, and the final credibility was obtained. In the analysis process, the opinions of two experts in the field of data analysis were used. After extracting information and coding, we checked their agreement with his perception of the material to make the data reliable. The samples' evaluation was based on the copied material. It was confirmed, and possible essential contents were discussed and clarified, so agreement and approval of the samples were obtained. In order to ensure the reliability of the data, the researcher focused his efforts on collecting information based on experience, which will help the objectivity of the data and will be a method to verify the reliability of the information<sup>13</sup>.

## Results

The findings related to the factors causing trauma in the Arbaeen ceremony were identified in four themes: management and policy-making, education, rest areas and locations, and traffic. These themes were extracted from 71 codes from the interviews conducted with ten experts, shown in the following tables.

The subject of education was one of the most important subjects of this study, which included the subcategories of general education, specialized health education, and education in the field of spiritual health that it explained briefly.

Public education before the ceremony, by media such as television, radio, and social networks, can solve most of the problems.

*"The possibility of terrorist and explosive attacks, and its prevention should be considered and trained."*

*(Participant 1)*

They emphasized. Pieces of training should include personal health education, communicable and non-communicable diseases, food poisoning, exposure to possible dangers, and spiritual health issues.

*"Some wrong beliefs in people can cause traumatic behaviors (such as walking with bare feet)."*

*(Participant 2)*

One of the essential things in this section is to inform people about the self-use of drugs and narcotics in these routes.

The next topic is management and policy-making, one of the most basic and essential issues in preventing, controlling, and managing traumatic events. Policymakers should take action immediately.

Organizations responsible for the health system must prepare months before the ceremony. Policymakers and executive managers should know previous events, lessons learned, and possible scenarios from casualty and terrorist incidents. They must be able to respond appropriately and move victims quickly. Planners and executives must consider the worst possible scenarios, maintain the safety and security of pilgrims, and not ignore the possibility of accidents. The data must be continuously monitored and evaluated to ensure the services' effectiveness. Increasing the readiness of responsive organizations requires managers' will, knowledge, experience, and skills.

*"The most important point is the joint planning of Iran and Iraq in the Red Crescent, the Ministry of Health, and the mobilization of the medical community."*

*(Participant 3)*

*"The high will of the governments of both sides and emphasis on special and new traffic control methods along the route to announce the necessary warnings (such as drones and its types and satellite images)."*

*(Participant 4)*

The traffic topic included three subcategories of traffic cases inside the country, traffic cases in the country of Iraq, and around the shrine. Considering that most of the traumatic events in the world are caused by traffic accidents, this issue is one of the things that must be managed. Applying special traffic restrictions before the Arbaeen pilgrimage in border cities, and managing traffic after the Arbaeen pilgrimage, especially in these cases, accidents and deaths are very likely due to the tiredness of the pilgrims. Using modern and new public transport fleets and banning private vehicles can reduce many of these problems. Also, the management of sending pilgrims in the form of pre-specified delegations in provinces and cities and the management of sending pilgrims from the origin separately to each province in a specific period can reduce many transportation and traffic accidents.

*"Professional road drivers and standard vehicles should be used on the routes leading to the border in*

*Iran, and even if possible, the passage of people with private cars should be limited."*

*(Participant 5)*

*"The modern transport navy should be used to prevent heat stroke and cold (using air conditioners and heaters)."*

*(Participant 6)*

*"A special pilgrimage route should be determined for people with disabilities, pregnant women, and people with wheelchairs."*

*(Participant 7)*

The theme of resorts and places has three sub-floors, processions, and places of rest and treatment centers. The non-standard and inadequacy of resorts and

processions is one of the essential factors in the occurrence of traumatic events. The Arbaeen ceremony is highly complex due to the uncertainty of the number of participants in advance, determining the capacity of night rests or stopping places on the way.

*"Pilgrims can see the location map of processions, emergency centers, and resort areas in an application and can register for overnight stay."*

*(Participant 8)*

*"Emergency centers should be properly placed so pilgrims can easily reach the entire route."*

*(Participant 9)*

Table 1: Codes resulting from the themes.

Themes	Category	Dimensions
<b>resort</b>	Resting places, resorts (Mokeb), and relief centers	Location of necessary resorts, determining the capacity of overnight rest and stopping places, preventing accommodation in non-standard and unknown places, using standard buildings and equipment such as canopies, the inadequacy of rest places, and correct location of emergency rooms for better access. Proper and safe placement of processions, using the application for the location map of processions, emergency centers, and rest areas.
<b>Education</b>	General, health and spiritual health	Using media and social networks to educate and reduce accidents, educating pilgrims before the ceremony about trauma, educating pilgrims during the ceremony about trauma, using information banners and brochures, teaching slow and smooth traffic in designated routes, Using psychological teams or spiritual health teams on the way, teaching some risky behaviors such as walking with bare feet, avoiding local offerings to reduce poisoning, using trauma health workers, using packaged drinking water, preventing distribution Water through tanks and mobile tankers, education about burns, frostbite, heatstroke, frostbite, discussion of religious psychology in increasing resilience, using clergy to improve religious psychology.
<b>Managerial</b>	Governments, guidelines, information management	Recording detailed information about traumatized people, coordination between organizations, identification of an organization related to trauma, dispatching convoys of people, maneuvers of specialized trauma teams before the ceremony, evaluation of the traumas that happened after the ceremony, coordination of health guidelines between the two countries of Iran, and Iraq, having a comprehensive directive, the high will of the governments of both sides, the use of unique and new methods of traffic control, the use of necessary warnings such as drones and satellite images.
<b>Traffic</b>	Iran, Iraq, in the area of the shrine	Adequacy of roads to reach the borders, specific and particular routes from the origin of the provinces to the borders, use of local and standard parking lots with specific entrances and exits, adaptation of roads based on weather conditions, separation of footpaths from vehicular passages, use of intelligent traffic control system, use of well-equipped and standard public vehicles, creation of unique routes for the access of health and security forces, limiting the passage of people with private cars, maintaining a distance of 3 meters in open places and on footpaths , the use of water sprinklers, umbrellas and recommendations to wear hats in hot weather, specifying specific routes for people with physical disabilities, using mobile and small cars on the route for the elderly and children and people with disabilities, using shoes and clothes It is appropriate to provide street lighting for night traffic, use safe and special separators in the shrine environment, separate people with disabilities, pregnant women and people in wheelchairs, maintain a distance of 1 meter in closed and crowded places.

## Discussion

The most important findings of this study are management topics, traffic factors, education topics, and placements for resorts and medical places. According to most participants, education is the most influential factor in preparing to deal with trauma during the Arbaeen ceremony.

Coordination is one of the critical elements of management. It includes a set of structural and human mechanisms designed to link components together to facilitate achieving goals<sup>14</sup>. In particular, the coordination between Iran and Iraq of responsible organizations as well as effective interactions and procedural standardization in planning, organizing, and allocating resources before, during, and after the ceremony, provide the possibility of providing better health services for pilgrims<sup>15</sup>.

A lack of coordination causes the improper distribution of resources. Therefore, coordination is the essential element compared to other factors such as resources and communication. Improved coordination can reduce casualties in the community. In addition, coordination requires transferring information between interested organizations to achieve a common goal. More resources and training are significant problems that affect coordination during mass gathering events and also create problems for disaster managers<sup>15,16</sup>.

The inefficiency of health education is one of the most significant challenges for health system preparation. Educational planning should be done before and during the Arbaeen ceremony, considering the educational content and target groups. In fact, according to the target group's needs, pilgrims, executive directors, and volunteer treatment teams should be trained, and the educational content of pilgrims should be different from that of executive directors and policymakers. Studies showed that disease transmission is one of the most critical public health challenges in such events. Hence, educational strategies about health issues and trauma are essential in preventing traumatic events and improving health<sup>17,18</sup>.

Since religious ceremonies are rooted in people's beliefs and are famous, people-centered education can reduce the gap between knowledge and practice in pilgrims, empower people, and increase their ability to deal with health threats. This goal is achieved by identifying precise and targeted

needs, compiling relevant content, and educational planning. In this study, like other studies on mass gatherings, an individual health training program, a trauma training program for pilgrims, and public health training should be included. Health, surveillance of votive foods, how to distribute water, and bioterrorism should be considered in the preparation program of executives and policymakers. Considering the purpose of holding the Arbaeen ceremony, a famous religious-ideological ceremony, it is possible to conduct training for the mosque clerics before the ceremony<sup>19</sup>.

An inadequate understanding of the risks of trauma among pilgrims is one of the other challenges of Arbaeen. Understanding the risks is the priority to reduce the occurrence of disasters and requires people-based preventive approaches<sup>20</sup>. In addition, the Sustainable Development Goals emphasize the role of education in increasing risk awareness and reducing people's vulnerability to risks. A study on the beliefs and methods of infection control in Hajj pilgrims showed that most participants had little understanding of the occurrence of respiratory infections and the need for vaccination during Hajj<sup>18</sup>. In the orders of Islam, it is stated that a person is obliged to protect his health and life in any place and situation, even in the holy lands, and avoid dangers. Since Arbaeen is a religious gathering, clerics have an important place in performing the ceremony and can influence the pilgrims' belief and understanding of the dangers during the pilgrimage.

Studies showed that factors such as the size of the population, equipment, weather, and duration, location of the ceremony, the type of ceremony, and the characteristics and behavior of the participants are effective in the occurrence of accidents and diseases in mass gatherings<sup>17,21</sup>. Comprehensive planning, rapid diagnosis, and effective management are required during preparedness to prevent traumatic events and their consequences. One factor that is effective in the occurrence of accidents is the time of the Arbaeen ceremony. The Arbaeen ceremony is held according to the lunar calendar. Its needs and challenges are different and depend on the ceremony's season; if the ceremony is held in cold seasons, cold-related traumas should be considered. If it is held in the heat, heat-related traumas such as Heatstroke should be considered.



Preparation for organized gatherings depends on investment in health infrastructure and the size of gatherings, and infrastructure strengthening and coordination should continue after crowding. Limited infrastructure, medical care system, wrong location, inadequate facilities, and lack of infrastructure increase the vulnerability of communities<sup>22,23</sup>. Also, the remoteness of health facilities and the lack of necessary road infrastructure can render medical services and emergency assistance ineffective.

The present study identified a need for coordination as a fundamental inter-organizational challenge. Coordinating responsible organizations in mass gatherings is one of the main concerns of planners, like other types of disasters and mass casualty incidents<sup>24</sup>. In terms of post-event management and the challenging management of disasters, one should focus on the problem of inter-agency coordination and the need for an integrated organization to ensure the monitoring and coordination of preventive activities. Therefore, it was agreed that a coordinated prevention strategy is essential<sup>24, 25</sup>. In addition, a specialized interdisciplinary approach is needed to hold the ceremony and to plan and coordinate with the involved organizations<sup>21,26</sup>. A deficiency of resources and specialized personnel can lead to crises of mass gatherings<sup>27</sup>. Therefore, it is essential to determine the facilities required for gatherings and identify the number of pilgrims, the ceremony's average time, and the time required to use the facilities<sup>28</sup>. Studies on mass religious gatherings, such as the Hajj and Kumbh Mela ceremonies in India, showed the importance of managing and providing adequate human resources and equipment before the ceremony<sup>21,26</sup>.

Lack of road facilities and infrastructure may increase the possibility of damage caused by mass incidents<sup>22,23</sup>. The creation of specialized treatment centers with expert personnel is a requirement due to the frequency of road accidents and the shortcomings of the patient transfer process. Sometimes, some mass gatherings overlap with natural hazards, terrorist, and mass casualty incidents; therefore, planning to prepare for these incidents is critical to prevent a disaster<sup>29</sup>.

Relying on limited government resources alone cannot cover the costs of gatherings, so gaining the trust of sponsors and managing donations is essential. Religious gatherings are an opportunity to improve the level of health system readiness through developing infrastructure and facilities and equipping and employing experienced forces in Iran and Iraq.

## Conclusion

Mass religious gatherings must be planned, organized, and managed by multiple groups at an international level. Due to the annual increase in the number of pilgrims and changes in the lunar calendar, the type and probability of risks vary among religious gatherings. Therefore, education focusing on understanding the risk and changing the attitude and behavior of pilgrims can help improve the level of preparedness. Developing a national strategic plan focusing on health system readiness can be effective for policymakers. The findings of this research can help policymakers and executives to improve their coordination. Therefore, pilgrim-oriented educational planning, along with controlling other challenges, is an opportunity to improve the health of pilgrims participating in the Arbaeen ceremony.

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## Conflict of Interest Disclosures

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## Authors' Contributions

Design and concepts: HRR, HT, Hkh, ZH, FA, MA and FA; Data Gathering: HRR, HT, and FA; Data analysis: HRR, HT, MHKM, Hkh, ZH, FA, and FA; Preparing manuscript and editing the paper: HRR, HT, MHKM, Hkh, ZH, FA, and FA.

## Ethical Statement

The ethical committee of Baqiyatallah University of medical sciences confirmed this study by IR.BMSU.REC.1399.290 code.

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