

# THE EXPERIENCES OF VICTIMS IN THE MASS GATHERINGS: A PHENOMENOLOGICAL STUDY

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## ABSTRACT

**INTRODUCTION:** The mass gathering events are becoming a big source of concern among public health practitioners. These events can affect a population's health in different ways. The study aimed to identify mechanisms associated with morbidity and mortality in mass gathering (MGs) events.

**MATERIAL AND METHODS:** This is a qualitative study that was conducted under a phenomenological approach. The study population included 21 people who were hospitalized due to injuries in the mass gatherings. Data collection was conducted through semi-structured and in-depth interviews.

**RESULTS:** A total number of 21 interviews were conducted in this study. Participants included 17 males and four females. Thematic analysis was used to identify 21 different themes and the themes were classified into five main areas. These five areas include Individuals' unpreparedness, unprepared relief organizations, lack of proper response plans, and risky behavior and psychological reactions.

**CONCLUSIONS:** The lived experiences of MGs victims showed that they need to be better educated at the community level about the potential MGs' health risks. One of the most effective measures to reduce mortality in the MGs is risk governance. Risk governance must be a national policy and priority at the time of holding large gatherings.

**KEY WORDS:** mass gathering; injury; public health; prehospital care; emergency nursing; emergency medical services

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## INTRODUCTION

Mass gathering is a phenomenon that a large number of people (depending on local circumstances, usually up to 25 000 people) gather in a specific location for various purposes, such as entertainment and sporting events, festivals, political and social campaigns, memorials, and religious ceremonies. Mass gatherings have time limits. They can gather people

from various communities or even countries when they become multicultural [1].

Historically, mass gatherings occurred in the form of sports, political and religious events at different locations in the world and sometimes they came along with many lost lives and injuries [2]. In particular, mass gathering disasters take place during religious ceremonies, including Haj in Mecca and Arbaeen in

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Iraq [3]. In the West, the term “mass gathering”: was initially used for gatherings such as football matches and concerts [4]. Also, India, as a country with a large population is the host of many religious mass gatherings [5]. Mass gatherings can be prone to man-made and natural incidences. Therefore, serious attention and planning are required before holding these types of gatherings. According to statistics, religious ceremonies have been the most hazard-prone events [6, 7].

Potential health risks in these events included; extreme weather-related illness, food and water-related diseases, communicable incidents and transportation accidents, injuries, and deaths especially those related to across-the-border gatherings [8, 9].

In recent decades significant numbers of morbidities and mortalities have been caused by mass gatherings all around the world and it has attracted international organizations such as the World Health Organization attention to these events [2]. In many mass gatherings that led to disasters, the population density had reached a critical point. The critical point is when the available space for each person reaches less than 50 cm<sup>2</sup>. Basically, for a moving population in a crowded area, at least 2.3 m<sup>2</sup> of space should be considered for each person [10]. When the per capita space reaches close to less than 1 m<sup>2</sup>, the smooth movement of the population will slowly be downed. At a density of 50 cm<sup>2</sup> per person capacity, space is maximized and the possibility of mobility is very limited. In an area of less than 50 cm<sup>2</sup>, people unintentionally push each other. At a *per capita* space of 20 cm<sup>2</sup> per person, we will see the dangerous force of high concentrations of people and create stress and an unhealthy environment [3].

The mechanisms behind morbidities and mortalities in mass gatherings are not well investigated in the world. Many policymakers and disaster managers do not have accurate and specific information about methods for the prevention of health-related hazards in mass gatherings [11]. It is necessary to identify and develop various dimensions of this phenomenon. Due to the single nature of mass gathering events, phenomenological surveys can help to investigate victims' experiences and to identify potential hazard mechanisms.

Due to the unknown mechanism of damage in mass gatherings as well as the increase in large-scale mass gatherings in our country, this study tries to investigate the experiences of injured people in mass gatherings, to determine the dimension of this

phenomenon. It is hoped that with a more comprehensive understanding of the mechanism of harm to the people in mass gatherings, the preparation and planning will result in none or a lower number of victims in events in the country.

## MATERIAL AND METHODS

This was a qualitative study conducted under a phenomenological approach. Phenomenology is studying lived experiences basically. Phenomenology pays attention to the world as lived by an individual, not facts that are separated from human experience [12, 13].

Due to the importance of victims' experiences in mass gathering events and the ability of phenomenological studies in identifying root causes of incidents, we applied the phenomenological approach in this research [14].

The study population included all people who were hospitalized due to injuries in mass gatherings. Being over 14 years old, willingness to participate, and having no mental retardation were selected as the inclusion criteria. Purposeful sampling accompanied by the snowball technique was continued until data saturation was reached. Finally, 21 people were interviewed. In the present study, data collection was done through semi-structured and in-depth interviews. In-depth interviewing is the researcher's intention to penetrate the deep layers of the interviewee's mind and obtain true information. The interview guide was used in this study. A total of 21 interviews were conducted.

A total of 21 interviews were conducted in this study. Participants included 17 males and 4 females. Participants had 3 undergraduate degrees, 6 diplomas, and 12 bachelor's degrees. The average age of participants was 29 years old (Tab. 1).

The duration of the interviews was between a minimum of 13 minutes and a maximum of 1 hour and 17 minutes, depending on the interviewee's willingness to continue. The interviews were conducted individually, to help the interviewee feel privacy while sharing their experiences.

At the beginning of each session, the interviewer explained the aim of the present study and assured participants that all data from the interviews would remain strictly confidential. The interviewees were asked about their anonymous demographic information, including age, education, and. A written agreement was obtained from each of the

**Table 1. Demographic characteristics of participants**

Gender	Male: 17 persons
	Female: 4 persons
Education	Under diploma: 3 persons
	Diploma: 6 persons
	Bachelor: 12 persons
Type of events	Political gathering: 2 persons
	Religious gathering: 10 persons
	Sport gathering: 7 persons
	Concert and festival: 2 persons

interviewees in order to formalize the consent of the interviewees to participate in the interview. There was a well-designed interview guide following with a list of open-ended questions.

During the interview, additional questions were asked. The interviewees were free to quit the interview whenever they wished. Data analysis was made possible for research based on data collection through selected questions and axes. The interviews were recorded and transcribed, and the sentences, phrases, and quotations that indicated people's understanding of the phenomenon were identified. In the next step, the researcher used important phrases to categorize the meanings that led to the achievement of the sub-themes. These sub-themes were also used to write about what the participants experienced in covering the themes. Eventually, the themes were covered in a wider range called domains. The Collaizi method was used to interpret and analyze the information obtained in this section [15]. To validate the information obtained, the participants were referred to and their compliance with the information was ensured.

## RESULTS

By analyzing the study findings and coding the information, 21 different themes were identified by the research team, and the themes were classified into five main areas. These main areas include; psychological reactions were unpreparedness of individuals, the unpreparedness of relief organizations, lack of proper planning for response, and risky behaviors. The first area identified was the area of psychological reactions, which included the three themes of fear of death, lack of access to relief workers, and lack of access to healthcare facilities. Almost all par-

ticipants in the study stated that their first reaction to the incident was fear of death and fear of the unavailability of relief workers and medical staff. For example, participants stated that:

"I could feel too much pressure on my chest. I was scared. My heart was pounding. Every time I looked, there were no emergency-response workers." (P 5)

"I knew my leg bones were broken and I was bleeding heavily. The ambulance was 50 meters away. I asked for help, but the emergency-response workers could not speak because it was so crowded around me that no one could move. I was panicked." (P 11)

The areas of unpreparedness of individuals include four themes lack of education to the community, lack of attention to overcrowding, low risk perception, and physical condition of individuals. Victims of mass gatherings generally criticized their unpreparedness and always blamed themselves for part of the incident.

"I could not believe that the crowd could bother me like this. Although I did not push hard, the crowd pressure was very high." (P 1)

"Our people do not know how to watch games together. They get stuck soon. When the game is over, everyone just rushes out. They do not think that maybe someone has a weak body, maybe someone is crushed under their arms and legs." (P 8)

"I have never watched TV. Teach me how to take care of myself in gatherings. They all advertise that more people should come to the gatherings. The body should not care a bit about people's health." (P 10)

The victims of the mass gatherings in various ways pointed to the underprepared of the relief organizations, especially in the absence of escape routes. They always blamed the congestion on relief organizations' workflow.

"We were stuck in the corner of a three-meter wall. The pressure of the crowd was on the walls. The authorities should have thought beforehand and understood the possible pathways of the moving crowd and plan it for the best option. If people get stuck, they cannot escape anywhere." (P 3)

"There were some soldiers next to us who were very scared. There was nothing they could do. Neither the emergency forces nor the Red Crescent staff. Whatever we shouted, we took the injured out of the crowd, and they did not move. I mean, not knowing anything to do in such situations." (P 19)

Another important but neglected area was the lack of proper planning for the response. In this area, there are a number of problems, such as a lack of quick alert systems, poor population management, poor food distribution, a lack of emergency-response workers, a lack of attention to food quality, and no evacuation plans, poor communication systems, and differences between organizations.

"I do not know if the emergency services were having tea or doing anything else, but there was no word from them. We were all busy watching the game. We were suffocating here. Nothing was happening." (P17)

One of the participants, who had an accident due to the crowd during the food distribution said that the food truck reached the crowd and went to it. "I hardly got hit by the car. I went up from the side of the car. The one who was already on the top fell down". (P10)

An interviewer from the experience of communicating with relief personnel said that (P21): "I went to one of the rescue staff and told him that the crowd should not move, otherwise it will be stocked. At that moment, a policeman came and said, 'No, the crowd has to go out faster, dangerous', and he encouraged the crowd to rush to the door, and then the accident happened" (Tab. 2).

## DISCUSSION

Mass gatherings can result in mass casualty incidents. These events attracted thousands of people, which may create more potential health problems such as injuries, infectious diseases, accidents, and deaths. The aim of the study was to identify experiences of mass gathering victims through a phenomenological approach. Results showed that experiences of mass gathering victims can be divided into five categories, including mental and psychological reactions; lack of preparedness in victims; lack of preparedness in responsible organizations; lack of suitable planning for response; and high-risk behaviors. The victims that participated in the study were injured in various gatherings such as religious and sports events, and political and entertainment campaigns. The Arbaeen mass gathering is an annual ceremony that gathers millions of people in Iraq. In recent years, many incidents have occurred in the country at Islamic gatherings, sports events, and other religious events [16].

Area	Theme
Psychological reactions	Fear of dying
	Lack of access to relief forces
	Lack of access to medical facilities
Unpreparedness in people	Lack of education to the community
	Lack of attention to crowd management
	Low risk perception
	Poor physical condition
Lack of readiness of relief organizations	Uneducated personnel
	There was no escape route
	Lack of proper ventilation
	Insecurity of structures
Lack of proper planning for response	Lack of rapid alert systems
	Improper population management
	Improper distribution of food
	Shortage in relief force
	Lack of attention to food quality
	No plan to evacuate
	Weaknesses in communication systems
	Inconsistency between relief organizations
High-risk behaviors	Drug and alcohol abuse
	Get excited to reach the attractive point

Lack of access to enough medical services at mass gathering events has been identified in various studies. Schwartz et al. [17] pointed out that medical goals in mass gathering events are very important [18]. The goals included assessment and stabilizing people that are injured or unwell, supporting responders; providing medical care to the local population; using the capacity of public health and emergency medical care systems to better prepare for and respond to hazard identification; risk assessment and analysis; risk mitigation; planning for access to those who demand medical services; and transportation of patients to the hospitals. A key decision in mass gatherings is to provide healthcare services such as PHC services and treatment of minor injuries and illnesses [19]. Relief organizations, especially EMS, are typically responsible for providing medical services to those who are injured on a fast track but lack the capacity to triage patients in mass casualties can be seen in this organization [20]. The need for medical services in mass gatherings depends on

various factors, including the temperature and humidity of weather, the duration of a ceremony or event held in outdoor circumstances, the mobility status of the crowd, the type of mass event, the crowd mood, consumption of alcohol and drugs, the crowd density, the geographical situation, past experiences, and the demographical status of the crowd.

Lack of education in people is also an important trigger for potential health risks in MGs. According to studies, low-risk perception and lack of self-protection awareness affected participants' well-being in MGs. Participants must be well educated in hand-washing, wearing masks, and keeping a suitable distance from others. However, maintaining social distance in MGs is difficult. In terms of risk perception and awareness, the people in charge of MGs should collect information from participants before gatherings, such as their age, gender, existing diseases, level of awareness, and education level, so that the right predictions can be made.

One of the most significant issues identified in this study was a lack of cooperation and coordination among respondents. Multi-authority cooperation during the planning is important in order to ensure seamless collaboration between the responders and stakeholders during the event. According to previous studies, planning for mass gatherings is necessary for health authorities [17] and also requires inter-organizational cooperation with police forces and other emergency responders [21]. Previous research demonstrated that having enough medical staff such as first-aid providers available and the use of treat-and-release directives has a significant impact on the required number of patients that are transported to a hospital and, consequently, decreases the workload for the EMS organization and healthcare facilities [22–26]. According to an Australian study by Zeitz et al. [27], the increase in workload for the rescue service in mass gatherings with a total of 5.7 million attendees in a two-year period was only minor. The workload for rescue service consisted of assistance in traffic control and on-call support. The police workload was correlated with the EMS workload. The main determinant for the police force's workload was the weather, while the EMS workload had a wider range of determinants.

Surge capacity planning in human resources decreased the risk of health problems during MGs. The use of adequate physicians, nurses, and emergency technicians not only speeds up medical handling but also prevents unnecessary dispatch of an ambu-

lance to healthcare centers [28]. Security arrangements in MGs result in the prevention of injuries that occur because of population pressure and stampedes. Thus, it must be considered the route for entrance and exit in a one-way flow. Karampourian, who studied religious MGs, proved human resources are essential to good preparedness and response to these events [7]. Allocating and managing human resources should be cost-effective, but it should be noted that sudden changes will reduce the provision of desirable services in organizations with minimal resources. Don't plan for the provision of experts. This can lead to a crisis. Numerous studies in MGs, such as the Hajj, Kumbh Mela in India, and sports games, have demonstrated the importance of managing and providing adequate human resources and equipment before an event [4, 8, 29]. Previous experience and evidence of past events can be used to estimate the manpower and equipment needed to provide appropriate health services during such events. Based on studies of health infrastructure, the size of the accumulation is a key factor in determining the level of readiness of the health system. Inappropriate locations for gatherings, poor facilities, or a lack of infrastructure and medical services can increase the vulnerability of communities. The remoteness of health facilities and the lack of necessary road infrastructure will make medical services and emergency assistance ineffective.

The lack of an early warning system was another case identified in this study. According to studies in mass gatherings, because conventional systems for identifying people in need have problems, it is necessary to consider an early warning system to identify health problems [30]. This system can be related to the surveillance system. Inadequate distribution of water and food is also a risk factor in mass gatherings. Water and food usually attract crowds. Crowds in water and food distribution centers pose a risk of overcrowding and injury [31]. It is necessary for the distribution centers of these materials to be well distributed. Also, the low quality of the food distributed can increase the risk of poisoning and increase the number of medical visits. In addition, in terrorist cases, there is a possibility of more catastrophes and mass casualties.

## CONCLUSIONS

Injuries at large gatherings are a one-of-a-kind experience. Most of the responders in mass gatherings



aren't informed about how previous measures can affect an individual's health during MGs. The lived experiences of MG victims showed that we need to better educate at the community level about health risks in MGs. The victims pointed out that MG risk perception is lower than reality in the country. Community education and integration the of disaster risk reduction strategies into social campaigns can promote individual preparedness. At the organizational level, it is necessary to plan for surge capacity and crowd management. Because Iran holds many religious ceremonies each year, public health measures during such events are good, but crude management is poor. In addition, coordination and cooperation between relief organizations is a major challenge. One of the most effective measures to reduce deaths in MGs is risk governance. Risk governance is holding mass gatherings must be a national policy and priority.

### Ethics approval and consent to participate

This study was approved by The Research Ethics Committees of Sirjan Faculty of Medical Sciences (approval ID: IR.SIRUMS.REC.1399.010).

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### Conflict of interests

The authors declared no conflict of interest.

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