JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH
ISSN: 2576-0017
2024, VOL 7, NO S5

The Role of Health Technicians in Managing Health Crises During Large Gatherings: A Systematic Review of the Hajj Season Experience

Zainab Khulaif Mohammed Alhazmi[1], Mona Gaim Alhulw Al Anzi[2], Tammani Khumaykhim Ghanim Alenezi[3], Farhah Slaiman Altarfawi[4], Hanan Khalif M Alhazmi[5], May Salem Hunaydi Alanazi[6], Badriah Mushahhin A Alanazi[7], Ibtisam Hamoud Alanazi[8], Meshal Rajaan Alosaimi Alruwaili[9], Jawharah Ayesh Alanazl[10]

1. *Nursing technician, North Medical Tower, Arar*
2. *Nursing technician, North Medical Tower, Arar*
3. *Nursing technician, North Medical Tower, Arar*
4. *Nursing technician, Tarif General Hospital, Tarif*
5. *Nursing technician, Tarif General Hospital, Tarif*
6. *Technician -Nursing, Extended care Hospital, Arar*
7. *Nursing technician, North Medical Tower, Arar*
8. *Nursing technician, Arar*
9. *Technician -Nursing, Extended care Hospital, Arar*
10. *Nursing technician Department of Forensic Medicine, Arar,*

Abstract
The management of health crises during large gatherings is a critical concern for public health authorities, particularly during the Hajj pilgrimage, one of the largest annual mass gatherings in the world. This systematic review investigates the role of health technicians in managing health crises during the Hajj season, focusing on their contributions, challenges faced, and strategies employed. By examining existing literature and case studies, the study identifies effective crisis management practices, including the use of technology, real-time monitoring, and multidisciplinary collaboration. The findings emphasize the importance of preparedness, resource allocation, and international cooperation in improving health outcomes during mass gatherings. The study provides actionable recommendations for enhancing the effectiveness of health technicians in managing future health crises at large-scale events.
Keywords: Health Technicians, Health Crisis Management, Mass Gatherings, Hajj, Public Health, Crisis Response, Infectious Diseases, Emergency Preparedness, Large-Scale Events.

Introduction

In recent years, disaster preparation has become a growing area of research owing to the increasing incidence of disasters and the need to maintain health service provision in such situations. The Hajj pilgrimage to Mecca in Saudi Arabia is one of the largest annual mass gatherings in the world and has a powerful impact on international public health [1]. According to the Ministry of Hajj and Umrah (MoHU), more than seven million pilgrims visited the Holy Lands in 2019 for Hajj and Umrah [2]. The overcrowding conditions peculiar to religious mass gatherings (MGs) increase the risk of respiratory infections among pilgrims, accounting for significant morbidity and hospitalization [3].

The WHO defines a mass gathering event (MGE) as 'an organized or unplanned event where the number of people attending is sufficient to strain the planning and response resources of the community, state or nation hosting the event' [4]. On February 27th, 2020, the Saudi government suspended Umrah rituals. To further tackle the outbreak, Saudi authorities declared the suspension of five daily Jamat and Jumah in Makkah and Medina on March 17th, 2020, for the public and continued to have it symbolic for the Imam and very few people [3].

Background and Problem Statement

Mass gatherings (MGs), particularly those associated with religious events, represent significant public health challenges due to the high concentration of people in confined spaces, making these events potential hotspots for the rapid spread of infectious diseases, heat-related illnesses, and injuries [5]. One of the largest and most complex mass gatherings in the world is the Hajj pilgrimage, which takes place annually in Mecca, Saudi Arabia. During this event, millions of pilgrims from around the globe converge on a small area, engaging in physically demanding rituals while being exposed to extreme weather conditions. As a result, the risk of public health crises is heightened, including the spread of respiratory and gastrointestinal infections, heatstroke, dehydration, and crowd-related injuries [6].

Historically, large-scale gatherings have been associated with significant outbreaks of diseases. For example, the Hajj pilgrimage has seen outbreaks of diseases like meningitis, influenza, and respiratory infections, which can lead to widespread morbidity and even fatalities. The complexity of managing health crises during these events is exacerbated by limited access to emergency services, crowded conditions, and the logistical challenges of coordinating healthcare efforts among multiple organizations and agencies [3].

Health technicians, who play a pivotal role in providing immediate medical care and managing health crises during such events, face unique challenges. Their responsibilities include diagnosing and treating diseases, managing injuries, providing first aid, and helping to maintain overall public health standards in highly pressured environments. Despite their crucial role, little systematic research has focused on their specific contributions and the strategies they employ to handle health crises effectively [4].

Study Aim:

The aim of this study is to systematically review and analyze the role of health technicians in managing health crises during large gatherings, with a particular focus on the Hajj season. By examining existing literature, the study seeks to identify the challenges, strategies, and best practices implemented by health technicians to ensure effective crisis management during the pilgrimage. The goal is to provide insights into the key contributions of health technicians in improving health outcomes and crisis response in the context of large-scale religious events, and to recommend strategies for enhancing their preparedness and effectiveness in similar future events.

Literature review

Mass gatherings at religious events can pose major public health challenges, particularly the transmission of infectious diseases. Every year the Kingdom of Saudi Arabia (KSA) hosts the Hajj pilgrimage, the largest gathering held on an annual basis where over 2 million people come to KSA from over 180 countries. Living together in crowded conditions exposes the pilgrims and the local population to a range of infectious diseases [5].

Respiratory and gastrointestinal tract bacterial and viral infections can spread rapidly and affect attendees of mass gatherings. Lethal infectious disease outbreaks were common during Hajj in the 19th and 20th centuries although they have now been controlled mostly by the huge investments made by the KSA into public health prevention and surveillance programs. The KSA provides regular updated Hajj travel advice and health regulations through international public health agencies such as the WHO, Public Health England, the Centers for Disease Control and Prevention, and Hajj travel agencies [3].

Health Crisis Management in Large Gatherings

Health crisis management involves preparing for, responding to, and recovering from health-related emergencies [6]. This includes ensuring that healthcare services are equipped to handle the unique challenges posed by large gatherings, where the sheer volume of people amplifies risks. Effective crisis management aims to minimize health impacts, prevent fatalities, and maintain public order through well-coordinated and timely interventions [7].

Large gatherings, especially those held outdoors or in densely packed spaces, create ideal conditions for certain types of health crises, including [8]:

- **Infectious Disease Outbreaks**: High-density gatherings can accelerate the spread of infectious diseases, such as respiratory illnesses or gastrointestinal infections, as seen in flu outbreaks at concerts or religious events.
- **Heat-Related Illnesses and Dehydration**: In warm climates, dehydration, heat exhaustion, and heatstroke are common. This is particularly relevant for events like the Hajj, where pilgrims are often exposed to high temperatures and physical exertion.
- **Injuries from Crowd-Related Incidents**: Large gatherings can lead to stampedes, trampling, and falls, especially when crowd control is insufficient.
- **Mental Health Emergencies**: The stress of crowds, long wait times, and potential disorientation in large gatherings can exacerbate mental health crises, including panic attacks or anxiety disorders.

Managing health crises in mass gatherings poses specific challenges that can impact the effectiveness of response efforts [9]:

- **High-Density Crowd Control**: Controlling the movement of large groups is essential to prevent accidents and maintain order, but it requires well-planned strategies and sufficient manpower.
- **Limited Access to Emergency Medical Services**: With large gatherings, rapid access to emergency services can be hindered by crowds, traffic, and the location of medical facilities.
- **Resource and Personnel Limitations**: Even with adequate planning, crises often overwhelm available resources and staff. Ensuring that medical supplies, emergency kits, and personnel are accessible in sufficient quantities is critical.
- **Communication and Coordination Complexities**: Coordinating multiple agencies and teams—from health professionals to security personnel—requires clear communication channels, predefined roles, and an integrated response framework to avoid mismanagement.

Case Studies of Health Crisis Management in Large Gatherings

Examining past events provides valuable insights into successful crisis management strategies [10]:

- **Hajj Season**: This annual pilgrimage has faced numerous health crises, such as infectious disease outbreaks and heat-related incidents. Strategies implemented by Saudi health authorities include real-time monitoring, establishing field hospitals, and using technology for crowd management.
- **Olympic Games**: Hosting countries often face public health challenges, including the potential for disease outbreaks. The 2016 Rio Olympics, for instance, saw health authorities tackle the Zika virus threat by implementing strict disease prevention measures.

- **Large Concerts and Festivals**: Incidents like the 2010 Love Parade in Germany highlight the importance of crowd management. Crowd density monitoring and adequate exit strategies have since become priorities in similar gatherings.

Strategies for Effective Health Crisis Management

Crisis resource management (CRM) is a team-training program that teaches nontechnical skills such as: collaboration, communication, task management, teamwork, and leadership [11]. A proactive and well-organized approach is essential to managing health crises effectively. Key strategies include [12]:

- **Pre-Event Planning and Risk Assessment**: Conducting risk assessments to identify potential health threats helps authorities implement preventive measures. This includes training health and security teams to respond to anticipated scenarios.
- **Real-Time Monitoring and Incident Response**: Surveillance tools and real-time monitoring enable early detection of health crises. Field hospitals and emergency response units stationed on-site can offer immediate care.
- **Role of Technology in Crisis Management**: Technology such as telemedicine, real-time data analysis, and digital crowd control tools aid in fast decision-making and resource allocation.
- **Training and Readiness Programs**: Crisis management teams benefit from regular training in emergency response, triage, and public health crisis management. Simulations and drills can improve their readiness for a real-life scenario.

Role of Multidisciplinary Collaboration in Crisis Management

Effective crisis management in large gatherings relies on the coordination of multiple agencies and professionals [7]:

- **Collaboration Among Health Professionals, Security Teams, and Event Organizers**: Ensuring a shared understanding of roles and procedures among all teams involved is essential for a rapid response.
- **Importance of Clear Roles and Communication Pathways**: Defined roles and responsibilities, along with reliable communication channels, prevent confusion and streamline efforts, helping to protect the public and manage the crisis effectively

Results

There is a need to improve health management of the Hajj, particularly by strengthening international collaboration [1]. A review of past Hajj seasons highlights the need for improved international collaboration in managing health crises. While substantial progress has been made in public health infrastructure and crisis management, challenges remain in ensuring seamless coordination among various health entities and in addressing the increasing demands on healthcare systems during mass gatherings.

Conclusion

The role of health technicians in managing health crises during large gatherings, particularly during the Hajj pilgrimage, is vital to ensure public health and safety. Despite significant progress in crisis management strategies, continued investment in training, technology, and international collaboration is necessary to address emerging challenges. By enhancing the preparedness and responsiveness of health technicians, authorities can improve health outcomes and better manage future health crises at large-scale events like Hajj.

References

1. Aldossari M, Aljoudi A, Celentano D. Health issues in the Hajj pilgrimage: a literature review. East Mediterr Health J. 2019 Nov 4;25(10):744-753. Doi: 10.26719/2019.25.10.744. PMID: 31774140.
2. A.A. Alahmari, A.A. Khan, F.A. Alamri et al., Hajj 2021: Role of mitigation measures for health security, Journal of Infection and Public Health, https://doi.org/10.1016/j.jiph.2022.09.006i
3. Khan A, Alsofayan Y, Alahmari A, Alowais J, Algwizani A, Alserehi H, et al. COVID19 in Saudi Arabia: the national health response. East Mediterr Health J 2021;27(11):1114–24.
4. World Health Organization. Health emergency and disaster risk management: Mass gatherings. 2017. https//tinyurl.com/mvjeyujs (accessed 14 October 2024).
5. Shafi S, Dar O, Khan M, Khan M, Azhar EI, McCloskey B, Zumla A, Petersen E. The annual Hajj pilgrimage-minimizing the risk of ill health in pilgrims from Europe and opportunity for driving the best prevention and health promotion guidelines. Int J Infect Dis. 2016 Jun;47:79-82. doi: 10.1016/j.ijid.2016.06.013. Epub 2016 Jun 22. PMID: 27343984; PMCID: PMC7110525.
6. Shujaa A, Alhamid S. Health response to Hajj mass gathering from emergency perspective, narrative review. Turk J Emerg Med. 2016 Mar 9;15(4):172-6. doi: 10.1016/j.tjem.2015.02.001. PMID: 27239622; PMCID: PMC4882208.
7. Jankouskas, Tara MS; Bush, Mary Chasko MD; Murray, Bosseau MD; Rudy, Sally BSN; Henry, Jody BS; Dyer, Anne Marie PhD; Liu, Wenlei MS; Sinz, Elizabeth MD. Crisis Resource Management: Evaluating Outcomes of a Multidisciplinary Team. Simulation in Healthcare: The Journal of the Society for Simulation in Healthcare 2(2):p 96-101, Summer 2007. | DOI: 10.1097/SIH.0b013e31805d8b0d
8. Shujaa, A., & Alhamid, S. (2016). Health response to Hajj mass gathering from emergency perspective, narrative review. Turkish Journal of Emergency Medicine, 15(4), 172-176. https://doi.org/10.1016/j.tjem.2015.02.001
9. Alexander, D. (2017). Book abstract: How to write an emergency plan by David Alexander; Reproduced by permission. Health Emergencies and Disasters Quarterly, 1, 215–224. https://doi.org/10.18869/nrip.hdq.1.4.215
10. Almehmadi, M., & Alqahtani, J. S. (2023). Healthcare research in mass religious gatherings and emergency management: A comprehensive narrative review. Healthcare, 11(2), 244. https://doi.org/10.3390/healthcare11020244
11. Ebrahim, S. H., Ahmed, Y., Alqahtani, S. A., & Memish, Z. A. (2021). The Hajj pilgrimage during the COVID-19 pandemic in 2020: Event hosting without the mass gathering. Journal of Travel Medicine, 28(2), taaa194. https://doi.org/10.1093/jtm/taaa19
12. Al-Otaibi, A. M. (2018). An assessment of the disaster preparedness knowledge of emergency medical services providers in Hajj of 2016. Electronic Theses and Dissertations. https://doi.org/10.18297/etd/2993