

ATINER CONFERENCE PRESENTATION SERIES No: HSC2018-0125

ATINER's Conference Paper Proceedings Series

HSC2018-0125

Athens, 22 November 2018

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Considerations for Global Health**

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ISSN: 2529-167X

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ABSTRACT

Mass gathering during the pilgrimage is associated with a significant global health risks. Measures should be taken by local and international health authorities to ensure high level of patients' safety and minimize development of outbreaks and early control of any potential global threats. This paper reviews the encountered risks and health problems during the Hajj season and discusses measures to minimize global health hazards.

Mass gathering is defined as the concentration of people at specific location for specific purpose over a set period of time.⁽¹⁾ There are many examples of mass gathering worldwide, which include major sporting, religious, and cultural events. The pilgrimage to the holy city of Makkah is considered the largest annual recurring mass gatherings worldwide.

Pilgrimage to the Holy City of Makkah is a major pillar of Islam that is required from all physically and financially capable Muslims. There is Mini-Hajj or Umrah which is a short visit to Makkah and doesn't involve all requirements of Hajj.

Annually there are about 3 millions pilgrims, from inside and outside Saudi Arabia, gather at the holy places in Makkah for about 7 days to perform Hajj.

Additionally there are another 10 million Muslims perform Umrah outside the Hajj period throughout the year.⁽²⁾

Such mass gatherings in a limited space and time will be associated with many challenges as well as opportunities to health services of hosting countries and communities. Challenges include the potential strain and compromise to the planning and response resources of health services. However such events offer golden opportunities for intersectoral collaboration and international research on such unique population from different countries and diverse backgrounds.

Encountered Risks and Health Problems during the Hajj

Pilgrims have a remarkable diverse background and health characteristics as they come from more than 180 countries.⁽³⁾ They are potentially exposed to many considerable health related risks.

These include the overcrowding and its associated physical, communicable and non communicable problems. As the Hajj season is planned according to the lunar calendar, this will lead to a significant seasonal variation of the encountered health problems. Heat and heat related problems during summer seasons will be the predominant health issues. In the other hand, influenza and other respiratory illnesses will be the main health problems during Hajj in its winter season.

Moreover the advancement in travel especially air travel contribute significantly to the speed of spread of infectious diseases and increases the risk of its disseminations that require global attention.

Such factors will be major determinants to the encountered health problems during Hajj season. These health related problems include:

Communicable Diseases

Communicable diseases include viral and bacterial respiratory and gastrointestinal tracts diseases. Hajj season is usually associated with high incidence of upper respiratory tract infections and the development of characteristic "Hajj Cough".⁽⁴⁾ The associated crowdedness increases the risk of developing community-acquired pneumonia, transmission of tuberculosis, and other major infectious illness as viral and bacterial meningococcal infections⁽⁵⁾

Non Communicable Diseases

Chronic medical problems as cardiovascular diseases, diabetes mellitus, and epilepsy continue to be a major health concerns. Relatively vigorous physical activities performed during Hajj could contribute to the development of complications of these chronic medical conditions. Local health authorities reported the performance of major surgical and cardiac interventional procedures for pilgrims during Hajj season including open heart surgeries.⁽⁶⁾

Trauma and Fire

There is a considerable increase risk of fractures, falls, and crushing injuries during the hajj season. There are reported cases of severe physical injuries and even death due to the crowding and stampedes of pilgrims^(1,4)

Fire related problems with varying severity were reported and continue to be a significant health hazards.

Measures implemented by local authorities were successful in minimizing the risk of fire and stampedes. These measures include the introduction of fire-resistant fiberglass tents, performing major projects and bridges, as well as implementing rules and regulations to facilitate the movement and transportation of the huge number of pilgrims and to ensure high level of safety.^(1,7)

Minimizing Global Health Risks

A spectrum of measures should be planned and implemented to ensure pilgrims' safety and minimize global health risks. This spectrum involves measures for preparing pilgrims before and during the Hajj season, implementing clear and strict rules and regulations, and continuous surveillance and monitoring.

These efforts were collaboratively conducted by the local authority of Saudi government, health authorities of some countries, and international agencies.

Before and during hajj;

Extensive efforts are exerted before each Hajj season which includes preparing pilgrims and increase their awareness about the expected health hazards and requirements for safe and healthy journey. Health education companies are conducted for pilgrims of some Muslim countries as well as western countries with Muslim's populations.^(8,9)

The Saudi health authorities require that all pilgrims should undergo medical check and receive certain vaccinations. These requirements are published annually and circulated to all Saudi embassies around the world and put as prerequisite for the issuing of Hajj's visa. These include vaccines for meningococcal meningitis, yellow fever, poliomyelitis, seasonal influenza, and pneumococcal vaccine for high risk groups.⁽¹⁰⁾

International and national health authorities raise alerts for prevailing global health threats as needed. This was noticed with the epidemics of MERS-CoV, Ebola, Zika virus, and respiratory tract viruses.^(9,10)

Preventive and curative measures that minimize health risks and manage acute and complications of chronic problems are taken during the Hajj season. The Saudi health authorities recruit thousands of additional staff and operate many additional primary health care centers as well as advanced seasonal medical centers and hospitals.⁽¹¹⁾

In addition, measures to minimize public health hazard are carried out as well which include periodical food inspection, sanitization activities, and insecticide sprayings.

Surveillance and Monitoring

Continuous monitoring and surveillance of the health status and disease pattern of the pilgrims is essential for early detection and intervention for any emerging health problems. This is an extensive effort and requires collaboration of all concerned local and international health agencies. The development of quadrivalent (ACWY) meningococcal vaccine was a success story for efficient process of monitoring and surveillance. This new vaccine was developed and replace the A, C polysaccharide meningococcal vaccine after noticing that there was a global spread of infection on immunized pilgrims with the old vaccine, A, C polysaccharide meningococcal vaccine in 2001.⁽⁸⁾

Conclusions

Hajj season provides golden opportunity for collaborative efforts of local and international health authorities in all preventive and curative measures.

Outbreaks and epidemics are of global concerns and should be addressed by a well coordinated global approach.

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