

Review

Public health considerations for mass gatherings in the Middle East and North Africa (MENA) region

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الاعتبارات الصحية العمومية للحشود في منطقة الشرق الأوسط وشمال أفريقيا

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الخلاصة: تصف هذه المراجعة الحشود الرئيسية في منطقة الشرق الأوسط وشمال أفريقيا، وتبعت الصحة العمومية المترتبة على هذه المناسبات، وتُقدّم توصيات إلى العاملين في مجال الصحة العمومية بالبلد المضيف. وخلال البحث في الأدبيات والإصدارات المحكّمة، عثر الباحثون على 77 بحثاً يتطرق لهذه المسألة، وتعلقت هذه الأبحاث جميعها بموسم الحج. واستفادت شبكة شرق المتوسط للصحة العمومية ومراكز مكافحة الأمراض والوقاية منها من المعلومات المُستقاة من مراجعة الأدبيات المشار إليها في إعداد وتنفيذ حلقتين عمليتين حول التصدّد في مجال الصحة العمومية أثناء الحشود لبرامج التدريب الميداني في مجال الوبائيات وضباط الاتصال بوزارات الصحة في عشرة بلدان. ومن أمثلة مخاوف الصحة العمومية الرئيسية المحتملة والمرتبطة بالحشود: الأمراض المعدية (مثل أمراض الجهاز التنفسي، وأمراض الجهاز الهضمي، والأمراض المنقولة بالغذاء)، والإصابات، والحوادث المرورية، والأمراض المتعلقة بالحرّ، ولدغات الحشرات، والأمراض غير السارية، والإرهاب.

ABSTRACT This review describes major mass gatherings in the MENA region and the public health implications of these events, and provides recommendations for public health officials of the host country. Through our search of the literature for peer-reviewed publications, we identified relevant 77 papers; all were related to the annual Hajj. Using the information obtained from the literature review, the Eastern Mediterranean Public Health Network (EMPHNET) and the Centers for Disease Control and Prevention (CDC) developed and conducted 2 workshops on Public Health Surveillance during Mass Gatherings for field epidemiology training programmes and ministry of health focal points from 10 countries. The main potential public health concerns associated with mass gatherings include: infectious diseases (e.g. respiratory disease, gastro-intestinal tract disease, foodborne disease), injuries, traffic accidents, heat-related illnesses, insect stings, non-communicable diseases and terrorism.

Considérations de santé publique pour les rassemblements de masse dans la région du Moyen-Orient et de l'Afrique du Nord

RÉSUMÉ Le présent article porte sur les principaux rassemblements de masse dans la région du Moyen-Orient et de l'Afrique du Nord ainsi que sur leurs conséquences pour la santé publique. Il fournit des recommandations à l'intention des responsables de la santé publique dans le pays d'accueil. À l'issue d'une recherche de publications parues dans des revues à comité de lecture, nous avons identifié 77 articles pertinents, relatifs au pèlerinage annuel de la Mecque (Hajj). À partir des informations tirées de cet examen de la documentation, le Réseau de la Méditerranée orientale pour la santé publique (EMPHNET) et les *Centers for Disease Control and Prevention* (CDC) ont préparé et organisé deux séminaires-ateliers sur la surveillance de la santé publique lors des rassemblements de masse, à l'intention des programmes de formation à l'épidémiologie de terrain et des points focaux au ministère de la Santé de dix pays. Les principaux problèmes de santé publique lors de tels rassemblements sont notamment : les maladies infectieuses (maladies respiratoires, de l'appareil gastro-intestinal, d'origine alimentaire, etc.), les traumatismes, les accidents de la circulation, les maladies liées à la chaleur, les piqûres d'insectes, les maladies non transmissibles et les actes terroristes

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Introduction

Mass gatherings, defined as planned or spontaneous events for a specific purpose, in a specific location, and for a specific period of time and typically with attendance exceeding 25 000 persons, may increase the likelihood of acute public health threats and strain the response resources of the hosting site [1]. Due to potential risk factors such as overcrowding, exposure to unsafe food and water, improper sanitation, and adverse weather, these threats may manifest in an increased risk for communicable disease transmission, acute injuries, and opportunities for terrorism. Increasingly, international mass gatherings, such as the 2010 FIFA World Cup in South Africa, are being held in developing countries and provide an economic boon to the host country. Public health preparedness is necessary to support public safety and minimize potential health risks to residents and travellers. Although many areas of public health preparedness are needed, efforts for international and high profile mass gatherings should include, at a minimum, a thorough risk assessment coupled with some form of enhanced epidemiologic surveillance and response [1].

While there have been publications that have addressed the public health threats associated with mass gatherings in the Middle East and North Africa (MENA) region, those available have described acute outcomes associated with The Hajj. During The Hajj, communicable disease outbreaks have been reported repeatedly [2]. However, no publication to date has addressed the scope and scale of mass gatherings in the MENA region and the public health implications of these events for countries in the region.

This review describes major mass gatherings in the MENA region and provides recommendations for public

health officials of the host country. It also includes a description of the mass gathering training workshop that took place as a part of this project

Methods

We conducted a literature search for peer-reviewed publications regarding mass gatherings in the MENA region by using the following search terms in PubMed: "Hajj", "mass gatherings", "sporting events", "social events", "festival" and "pilgrimage". Our search focused only on planned mass gatherings. Manuscripts were excluded if the focus of the mass gathering event was outside the MENA region.

We consulted with ministries of health across the MENA region and used internet search engines to describe the purpose, scale and frequency of major mass gatherings in the region.

Using the information obtained from the literature review, The Eastern Mediterranean Public Health Network (EMPHNET) and the Centers for Disease Control and Prevention (CDC) designed, developed and conducted the first workshop on Public Health Surveillance During Mass Gatherings for field epidemiology training programmes and ministries of health focal points in the MENA region in Amman, Jordan during 25–29 September 2010. The workshop was aimed at enhancing preparedness, surveillance and response during mass gathering events in the MENA region. The workshop was supported by Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET), and the Council of State and Territorial Epidemiologists (CSTE).

Results

Our search identified 77 peer-reviewed manuscripts with a research

or public health focus on planned mass gatherings in the MENA region [3–79]:

All 77 were related to the Hajj. Specifically, 71 were research papers and 6 were reviews. Most (50, 65%) focused on communicable diseases such as an investigation of an outbreak; 7 assessed all potential risks associated with attendance at a planned mass gathering; 5 examined noncommunicable diseases and 10 investigated heat stroke-related issues; 5 focused on other issues specific to Hajj such as skin-related disease and vaccination requirements.

Although our research addressed only the Hajj as a major mass gathering event, there are many other planned mass gatherings in the MENA region still not addressed in the literature. Table 1 shows various examples of planned mass gatherings in the region. Some of these events attract only a few thousand participants, but many attract millions. The main potential public health concerns associated with such gatherings include: infectious diseases (e.g. respiratory disease, gastrointestinal tract disease, foodborne disease), injuries, traffic accidents, heat-related illnesses, insect stings, noncommunicable diseases and terrorism.

Residents on field epidemiology training programmes and Ministry of Health focal points from 9 countries (Afghanistan, Egypt, Iraq, Jordan, Morocco, Pakistan, Saudi Arabia, Syria, and Yemen) attended the Public Health Surveillance during Mass Gatherings workshop. Attendees discussed the existing strategies and experiences of their countries with mass gatherings. They worked with external CDC and EMPHNET experts to identify ways in which those strategies might be strengthened. The workshop provided the participants with comprehensive training on dealing with public health risks pre-, during, and post-event. Training focused on risk

Table 1 Attendance at major mass gatherings in the Middle East and North Africa region

Event	Type	Estimated attendance
Afghanistan		
Nawroz	Cultural	150 000–300 000
Egypt		
International Egyptian marathon	Sport	>1500
Mohammed's (BPUH) birthday (Nile Delta)	Religious	3 million
Iraq		
Anniversary of death of Imam Alhussain	Religious	3–4 million
40th day of Imam Alhussain	Religious	5–6 million
Anniversary of birth of Imam Almahdi	Religious	5–6 million
Jordan		
Dead Sea Ultra Marathon	Sport	>4000
Jerash Festival of Culture and Arts	Cultural	100 000
Eid event in Aqaba city	Religious	70 000–100 000
Morocco		
Moussems	Religious	30 000–100 000
Marrakech international marathon	Sport	>5000
Pakistan		
Basant Festival	Cultural	100 000
Tablighi Ijtema	Religious	>500 000
Dawat-e-Islamie	Religious	200 000
Urs events of famous saints	Religious	300 000–400 000
Saudi Arabia		
Hajj	Religious	3 million
Riyadh Motor Show	Trade	96 000 during 5 days
Saudi International Motor Show	Trade	>100 000 during 5 days
Al Janadriyah Heritage and Cultural Festival	Cultural	> 1 million during 2 weeks
Syrian Arab Republic		
Bosra festival	Cultural	1.2–2.5 million over 10 days
Anniversary of death of Imam Alkadhem	Religious	5–6 million
Yemen		
Al-Hamdi mass gathering	Religious	12 000–45 000
20th Gulf Cup (football)	sport	60 000

assessment, surveillance, training, risk communication, response, and post event activities.

By the end of the workshop, residents had developed the mass gathering plan for their countries. Participants then implemented their country projects within the following 6 months under the guidance of experts from CDC, CSTE, and EMPHNET.

In February 2011, the field epidemiology training programme residents attended a second mass

gathering workshop which gave them the opportunity to present their country's mass gathering plan and the findings of their surveillance evaluation. They also received training on scientific communication skills, especially manuscript writing, and then worked closely with CDC, CSTE, and EMPHNET experts to translate their surveillance evaluation results into scientific manuscripts for publication in peer-reviewed public health journals.

Discussion

In working closely with the workshop participants and Ministry of Health focal points from 9 countries in the MENA region, it was clear that many routine and sporadic mass gatherings events are held in the MENA Region, including cultural, religious and sporting events. While the literature review shows that prior research in the region has concentrated solely on the Hajj, one of the largest mass gatherings in the world, it is evident there

is a gap in research focusing on other significant mass gatherings that occur in the region. Public health practice and research must address other mass gathering events to determine risks and identify adverse health outcomes to improve the safety of these events for the region.

Absence or weak surveillance systems at mass gathering events, lack of information for decision-makers, poor advocacy supporting the establishment and/or strengthening of surveillance systems at mass gatherings, a shortage of skilled public health personnel, lack of specific training programmes, and the absence of, or poor, comprehensive plans for mass gathering events, are major challenges that face the countries in the MENA

region. These challenges can vary between different countries.

The World Health Organization developed guidance for “communicable disease alert and response for mass gatherings” [1]. This guidance assesses the operations and methods required to strengthen health systems for alerts and response to communicable diseases. It is recommended to develop mass gathering guidance specific to the MENA region.

Further recommendations for strengthening public health surveillance in the MENA region were:

- Assign mass gatherings focal points of contact at EMPHNET.
- Develop policies for sharing the results of mass gatherings surveil-

lance and utilizing experience of others.

- Develop a system for sharing health information of travellers to track the health situation of the attendees.
- Enhance the involvement of field epidemiology training programmes in the region in conducting mass gatherings surveillance projects by providing technical assistance for the participants on these training programmes to analyse the data collected during gatherings.
- Organize and support related projects and activities.
- Enhance the exchange of field epidemiology training programme participants in the region so they are able to participate in different mass gathering events.

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