

## Pilgrims influx, a global threat for cross-microbial resistance

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### EDITORIAL

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Please cite this paper as: Gillani SW, ur Rahman SA, Abdul MIM. Pilgrims influx, a global threat for cross-microbial resistance. AMJ 2017;10(5):439–441.

<https://doi.org/10.21767/AMJ.2017.3006>

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Massive crowd is staying in close proximity to Holy land of Makkah & Madinah. All pilgrims are involved in physically demanding rituals (10, 15, 20 days), thus suffering from lack of sleep, fatigue reduces their resistance and immune power making them more vulnerable to illness. Aggregation of crowd in a relatively small geographical spread poses a global risk of develop and extend of virulent microbial strains during Hajj and/or Umrah. Hajj (once annually) and Umrah (daily) are the religious pilgrimage offered by Muslims in a blessed place called Makkah in Saudi Arabia. Hajj takes place in the 12th lunar month (Dhu'l-Qi'dah) of Muslim calendar and is mandatory on every adult Muslim once in her/his life-time whoever can afford it. However, Umrah is an optional pilgrimage that can be performed anytime during whole year. These pilgrimage to Makkah & Madinah every year attracts people from several countries (estimated >50) with different cultural backgrounds and age groups with/without different health needs. In recent decades there is a rise in number of pilgrims coming to perform Hajj and/or Umrah (Figure 1).<sup>1</sup>

International Islamic Organization (OIC) has declared Madinah as the capital city of Islamic tourism for year 2017, this will increase the number of visitors in coming year, as it holds

>200 sites, including historic buildings and many archaeological places with religious importance.<sup>3</sup>

Health and care were always the key issues during Hajj and Umrah due to migration of millions of pilgrims caused vulnerable health hazards.<sup>4</sup> Pilgrims from all over the world carries different kinds of infections with adaptable resistance patterns and the unavoidable closeness with thousands of pilgrims makes it easy to disseminate those infections.<sup>5</sup>

Due to the over-enthusiastic exertions and physically demanding regimen of the rituals the pilgrims are more vulnerable to illness.<sup>6</sup> These factors may then render an healthy individual with infection and a potential carrier of the infection when he returns to his home country despite the fact his home country originally at low risk region for such infections. Moreover many pilgrims are from tourist attracted countries, where millions of tourists visits their countries annually and when they get in contact with the affected pilgrims they become the second carrier of infections and carries forward this infection to those countries which are not involved in pilgrimage and thus founding a global threat.<sup>7</sup>

Fever, cough, sore throat, sputum production, rhinorrhea and malaise are the common symptoms which can be seen in about 47 per cent of pilgrims.<sup>8</sup> Most of the pilgrims practice self-medication without any diagnosis with the medical practitioners, this lead to more severe problems. Staphylococcus aureus is the most common bacteria found among pilgrims and it is resistance to methicillin (MRSA) and too many other antibiotics. Several other sources for transmission of bacterial/viral infections were identified during Hajj and Umrah.<sup>9</sup>

The public health and medical community of Saudi Arabia learned from the past experiences every year and trying to provide the best medical care that reduces the number of patients during Hajj and Umrah.<sup>10</sup> However the after effects of pilgrimage on the global health which pose a clear threat, needs further elaborations and warrants for preventive measures to minimize the spread of infections,

particularly the resistant strains of micro-organisms. Developing of resistant microbial strains to current anti-microbial therapy is a potential concern and pilgrims can possibly mobilize this too globally at a faster rate, thus a need of monitoring system would be priority in current scenario.

In recent years Ministry of Health of Saudi Arabia faced the emergence of several new influenza viruses and coronaviruses, such as Middle East respiratory syndrome coronavirus (MERS-CoV) which was first reported in 2012 in Saudi Arabia and all feared that it may become pandemic when discovered that coronavirus can sporadic mutate. Since 2012 till Oct-21st 2016, out of 1,433 confirmed cases of MERS-CoV 612 patients have died.<sup>11-13</sup>

### Recommendations

Several health related measures should be made to stop and prevent spreading of infections globally. Mobile clinics should be increased in the pilgrim areas. The use of over the counter (OTC) medications should be monitored. Well trained pharmacist should be engaged in health care system during Hajj and Umrah. Also most importantly clear polices should be send to all the countries, so that the pilgrims can be well educated on their health issues when they arrive in Saud Arabia. The proper vaccination, awareness and screening programs should be arranged and observed in each country. Various ways should be made to recheck that these policies are being followed by all the countries.

Special considerations to limit the development of resistant strains of microbial to be considered such as:

- 1) Discouraging/limiting patients to use broad spectrum and newer antibiotics currently known to be effective against micro-organisms like MRSA.
- 2) Strict medical screening for highly contagious infections like mycobacterium infections to be performed before start of pilgrimage and infected patients should be stopped from mingling with the crowd.
- 3) Also there is a possibility that in mass gatherings various new airborne viruses or arbovirus infections and mosquitos-borne viruses can emerge at large scales which may lead to epidemic and pandemic.<sup>14</sup>
- 4) Preventive and control measures should be taken to minimize the spread of infections, such as by decreasing the mosquito rate by fumigation of larvicides or insecticides and also by reducing contact between pilgrims and mosquitos.
- 5) Patients arriving to home countries after pilgrimage to be medically screened for symptoms of serious infections and be quarantined, if needed. Moreover, impact of influx of pilgrims on the health and infection pattern on

local residents of Saudi Arabia is another issue which needs attention as well.

- 6) A recent cohort study which was conducted on 154 French pilgrims in 2012 whose nasal swabs were sampled prior departing to France had resistance strains which were not in France.<sup>15,16</sup>
- 7) Pilgrims returning to their home countries should pass through quarantine section at airports where they can be screened and detection of infections can be done by taking their throat and nasopharyngeal swabs.<sup>17</sup>
- 8) Arrangements should be made that the pilgrims returning back to their home countries should not have direct community excess until proper screening and confirmation that they are free from harmful micro-organism.
- 9) Globally the capacity of laboratories should be build-up to detect any kind of infections and also preparing of recommendations for clinical care and close monitoring of infected pilgrims should be done. In this way the global prevention strategy should be designed and achieved.

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**PEER REVIEW**

Peer reviewed.

**CONFLICTS OF INTEREST**

The authors declare that they have no competing interests.

**FUNDING**

Self-sponsored

**Figure 1: Below is not supporting the argument of increase in number chronologically**

