Religious Festivals Linked to Major Flu Outbreaks

Flu vaccination programs should take large religious gatherings into account, researchers say.

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Seasonal influenza kills between 250,000 and 500,000 people every year, according to the World Health Organization. That makes it one of the world’s major health hazards. Epidemiologists have spent significant resources studying flu and the way it spreads.

And yet the processes that trigger flu epidemics are still not fully understood. The WHO collects figures showing the weekly rate of infection in most countries, providing a wealth of information for epidemiologists seeking to predict when outbreaks are likely and to plan vaccination programs based on predictions about which strain poses the greatest risk.

But much more can be gleaned from the data. Flu passes easily between individuals who come into contact, suggesting that mass gatherings should promote its spread. Religious festivals such as the Hajj and Hanukkah, which bring together millions of people, ought to play a significant role.

However, epidemiologists have not explored the impact of religious
festivals on infection rates. Until now.

Today, Alice Chiu Qianying Lin and Daihai He, at Hong Kong Polytechnic University in China, say they have studied flu infection rates in a number of Middle Eastern countries and their link with religious festivals for the first time. And they say their results have important implications for the timing of vaccination programs.

Hanukkah is an eight-day Jewish festival celebrated in November or December. It is a significant holiday in Israel, where families come together to celebrate.

The Hajj is an annual five-day festival in which millions of Islamic pilgrims travel to Mecca in Saudi Arabia. In 2016, some 1.8 million pilgrims made the journey.

Chiu and co reason that these festivals should have a significant impact on flu infection rates. However, the effect of the Hajj is difficult to study because Saudi Arabia does not make flu infection data publicly available.

Instead, Chiu and co downloaded flu infection data between 2009 and 2017 from six countries that border Saudi Arabia: Bahrain, Egypt, Iraq, Jordan, Oman, and Qatar. They also downloaded the rates for Israel over the same period.

The team then plotted the figures over time and compared the infection patterns with the timing of the festivals. “Our aim is to study the impacts of these religious festivals on the patterns of influenza,” they say.

The results show a striking pattern. “In all study years but 2009, influenza A peaked after Hanukkah in Israel,” say the researchers. “Furthermore, the aggregated influenza A confirmations of the other six Middle East countries peaked after Hajj consistently each year.”

That has important implications. “We predict unless an emergence of a new influenza strain (e.g. in 2009), such patterns between influenza and religious festivals are likely to persist in future years,” say Chiu and co.

“The optimal timing of mass influenza vaccination should consider these festival dates.”

This work shows how patterns of human behavior can affect health. The Hajj is one of the biggest gatherings on the planet. An interesting
question is how many deaths could be avoided with a vaccination program that takes this festival into account. And since flu has a significant economic impact because sufferers are unable to work, how much money could be saved this way?

Chiu and co do not address these questions, which leaves them open to epidemiologists or economists with a few hours to spare.

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