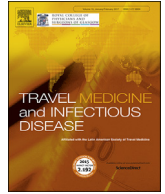




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Correspondence

Australian Hajj pilgrims' perception about mass casualty incidents versus emerging infections at Hajj



Keywords:

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Dear Editor,

The risk of fatality from incidents in religious mass gatherings (MGs), including Hajj, is five times higher than that of other MGs [1]. Over the last four decades ten major stampedes (with ≥ 100 fatalities) have occurred at Hajj (Table 1); it is believed that, a crane collapse and a stampede disaster during the Hajj 2015 killed over 2000 people [2]. Despite the frequent occurrence of mass disasters at Hajj, pilgrims' awareness and concern about these incidents have not been previously explored. This study assessed Australian pilgrims' risk perception of mass disasters compared to that of Middle East Respiratory Syndrome (MERS-CoV) and Ebola during the Hajj

Table 1
Major mass casualty incidents at Hajj^a.

Date of incident	Number injured	Number of fatalities	Time of the incident	Accident type	Site of incident	Reason of incident
September, 2015	1278	769	Morning	Stampede	Near Jamarat pillars and bridge, and the crossing of street 204 and 223	Unknown reason
September, 2015	200	107	Evening	Crane collapse	The Holy Mosque	Crane collapse
January, 2006	289	364	Afternoon	Stampede	During the stoning ritual at the Jamarat bridge in Mina	When a bus load of travelers arrived together at the eastern access ramp to the Jamarat bridge some pilgrims tripped over rapidly resulting in a fatal stampede
January, 2006	62	76	Afternoon	Building collapse	Mecca (near the Holy mosque)	Hotel collapse
February, 2004	244	251	Morning	Stampede	During the stoning ritual at the Jamarat bridge in Mina	Caused by some pilgrims who were not organized and carried personal belongings along which caused obstacles in the movement of the mass
February, 2003	NA	14	Morning	Stampede	During the stoning ritual at the Jamarat bridge in Mina	NA
March, 2001	NA	35	Morning	Trampled to death	During the stoning ritual at the Jamarat bridge in Mina	NA
April, 1998	180	119	Morning	Trampled to death	The Jamarat bridge in Mina	Panic following several pilgrims' fall on the overpass during the final stoning ritual
April, 1997	1500	343	Morning	Fire	Tents in Mina	Caused by explosion of canisters of cooking gas
April, 1994	NA	270	Afternoon	Stampede	During the stoning ritual at the Jamarat bridge in Mina	Some pilgrims fell from a pedestrian overpass at the Jamarat bridge as a wave of pilgrims crushed with those already on the overpass leading to a cascade of events resulting in a fatal catastrophe
July, 1990	NA	1426	Morning	Stampede	Crush in pedestrian tunnel leading to holy sites (Al-Ma'aisim tunnel)	Failed ventilation
July, 1989	16	1	NA	Terrorist attack	Holy mosque	Bomb explosion
July, 1987	649	402	Afternoon	Violent conflict	Holy mosque	A clash between demonstrators and security force
December, 1975	138	200	NA	Fire	Mina	Gas cylinder explosion

^a These data have been collated from various news items and published reviews [1,2].

2014 and 2015.

Two self-administered cross-sectional surveys were conducted among Australian Hajj pilgrims aged ≥ 18 years before their departure to Saudi Arabia to attend the Hajj 2014 and 2015 [3,4].

A total of 771 pilgrims were recruited during the two study periods (356 in 2014 and 421 in 2015). Across both years, 68% (529/771) of respondents reported to be concerned about mass casualty incidents at Hajj compared to 75% (218/290) being concerned about MERS-CoV ($p = 0.03$) and 56% (307/555) being concerned about contracting Ebola ($p < 0.01$). Compared to 2014, fewer respondents in 2015 were concerned about mass disasters at Hajj (72% [$n = 255/356$] versus 62% [$n = 263/421$], $p < 0.01$).

In Hajj 2014, pilgrims who received pre-travel health advice from general practitioners (GPs) (OR: 1.5, 95% CI: 1.1–2.5, $p = 0.04$) or from family members and friends with Hajj experience (OR 1.6, 95% CI: 1.1–2.5, $p = 0.04$) were more likely to be concerned about mass accidents compared to those who did not seek such advice. In Hajj 2015, employed (OR 1.6, 95% CI: 1.1–2.6, $p = 0.02$) and highly educated (OR 6.9, 95% CI: 2.4–19.8, $p < 0.01$) pilgrims were more likely to be concerned about mass casualty incidents than their counterparts.

Although these findings cannot be generalized to pilgrims from other countries with alternative cultural, educational and socioeconomic backgrounds, this report indicates that there is greater concern among pilgrims about mass casualty compared to emerging infectious diseases, and that casualties and personal safety need to be discussed in pre-travel health advice from GPs and from travel agents. The catastrophe in 2015 happened when fewer pilgrims were concerned about disasters indicating that bringing about behavioral change such as through public awareness, social distancing and the prediction of the peak time of congestion are important in avoiding, if not averting, mass casualties [5]. Lack of some pilgrims' awareness about the risk of accidents such as stampedes is concerning, as less prepared pilgrims might be more readily vulnerable to such disasters. Currently there is no official health recommendation on disaster prevention from the Saudi Arabian Ministry of Health, but these findings indicate that such recommendation could be helpful.

To conclude, there are significant opportunities to improve the awareness and behavior of Hajj pilgrims to reduce the risk of mass casualty incidents during Hajj. Robust studies are needed to gauge this further and formulate specific preventive strategies.

Conflict of interest

Professor Robert Booy has received funding from Baxter, CSL, GSK, Merck, Novartis, Pfizer, Roche, Romark and Sanofi Pasteur for the conduct of sponsored research, travel to present at conferences or consultancy work; all funding received is directed to research accounts at The Children's Hospital at Westmead. Dr Anita E. Heywood has received grant funding for investigator-driven research from GSK and Sanofi Pasteur. Dr Harunor Rashid received fees from Pfizer and Novartis for consulting or serving on an advisory board. The other authors have no competing interests to declare.

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