Knowledge, attitudes and practices concerning Middle East respiratory syndrome among Umrah and Hajj pilgrims in Samsun, Turkey, 2015

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We performed a questionnaire study to determine knowledge, attitudes and practices concerning Middle East respiratory syndrome (MERS) among people intending to participate in the Hajj or Umrah Muslim pilgrimages. Of the 381 respondents aged between 17 and 85 years, 55% had never heard of MERS, while only one in three knew that it is a respiratory disease. Approximately half were insufficiently informed about protective measures. Prospective pilgrims do not seem prepared to take such precautions.

We performed a survey among people intending to visit the Arabian Peninsula for the Hajj or Umrah pilgrimages and aimed to determine their awareness about Middle East respiratory syndrome (MERS).

Hajj in 2015 will take place from 21 to 25 September. Umrah is a similar pilgrimage that can be undertaken at any time of the year but is likely to be more crowded during the month of Ramadan (18 June to 17 July 2015). In 2015, 55,540 people from Turkey secured the right to perform the Hajj [1]. Because of the ability of infectious diseases to spread rapidly at mass gatherings, the Saudi Ministry of Health (MoH) advises people 65 years and older, pregnant women and children under 12 years and individuals with weak immune systems or chronic diseases to postpone travelling as long as there is the risk of MERS in the area [2]. People wishing to perform the Hajj or Umrah are advised to follow general hygiene measures such as regular hand washing, using disposable materials and using masks [2-4]. Knowledge and application of basic hygiene principles and measures in such an environment is therefore vitally important.

Enrolment in the study

Residents of Samsun, Turkey, intending to perform the Hajj or the Umrah and applying for immunisation to community health centres before the busiest months

for pilgrimages were enrolled during the period from 4 May to 24 July 2015. Samsun is a city with a population of 1.25 million on the north coast of Turkey. It has seven community health centres providing immunisation services for prospective pilgrims (four in the central area and three in outlying districts). Two of these (one in the centre and one outlying) were chosen for this study. In face-to-face interviews, study participants were administered a questionnaire with 16 questions on demographic data and knowledge, attitudes and practices concerning MERS. The participants were informed about the study before the interview. The study was approved by the ethics committee of the Ondokuz Mayıs University Clinical Research Ethics Commission.

Survey participants

Of the 381 participants, 49% (185 people) were male and 51% (196 people) female. Mean ages were 59 ± 12 years (range: 17-85). Education above primary school level was recorded for 26% of the participants (99 people). Sixty-four per cent (244 people) met at least one of the conditions for which the Saudi MoH advises postponement of travel. Chronic diseases, hypertension, diabetes and obesity were significantly more common in women than men ($p < 0.05$). The influenza vaccination coverage (2014/15 season) was only 7.1% (27 people). Table 1 shows demographic data and comorbidities for Umrah and Hajj pilgrims who participated in the study.

A quarter ($n = 97$) participants had gone on the Hajj or Umrah at least once previously. The mean number of previous pilgrimages they had made was 1.85 ± 1.71 .

Knowledge about Middle East respiratory syndrome

The proportion of participants who had not heard of MERS was 55.6% (212 people). Awareness of MERS was significantly higher among those who had gone on

TABLE 1

Demographic data and comorbidities in prospective Umrah and Hajj pilgrims, Samsun, Turkey, May–July 2015 (n = 381)

	Women n = 196	Men n = 185	Total n = 381	p
People older than 65 years	69 (35%)	67 (36%)	136 (36%)	0.460
Children younger than 12 years	0 (0%)	0 (0%)	0 (0%)	NA
Pregnant women	1 (1%)	NA	1 (0%)	NA
People with chronic diseases	117 (60%)	81 (44%)	198 (52%)	0.001
• Hypertension	88 (45%)	44 (24%)	132 (35%)	0.000
• Diabetes	51 (26%)	28 (15%)	79 (21%)	0.006
• Respiratory diseases	14 (7%)	9 (5%)	23 (6%)	0.237
• Heart diseases	28 (14%)	21 (11%)	49 (13%)	0.242
• Kidney diseases	7 (4%)	7 (4%)	14 (4%)	0.563
People with cancer	3 (2%)	0 (0%)	3 (1%)	0.135
People with weakened immune system or taking immunosuppressive drugs	1 (1%)	0 (0%)	1 (0%)	0.514
At least one condition for which the Saudi MoH recommends postponement of the Hajj and Umrah	133 (68%)	111 (60%)	244 (64%)	0.068
Obesity	36 (18%)	17 (9%)	53 (14%)	0.007
People vaccinated against influenza (2014/15 season)	14 (7%)	13 (7%)	27 (7%)	0.562

MoH: Ministry of Health; NA: not applicable.

A p value of $p < 0.05$ was considered significant.

a pilgrimage before (chi-square test: 6.748; $p = 0.007$) and those with university education level (chi-square test: 46.718; $p < 0.001$). Only 34% of participants (129 people) knew that MERS is a respiratory disease. Of those 169 who were aware of MERS, 60% (101 people) had heard of it through newspapers or television, 25% (43 people) from healthcare workers and only 4% (seven people) from religious officials. Once informed about MERS, almost half of the participants realised the importance of protective measures against MERS-CoV infections such as hand washing, mask use and avoiding contact with sick people (Table 2). However, only 22.83% (87 people) knew that antibiotics are ineffective against MERS.

While 76% of participants (288 people) said they did not intend to take protective measures against MERS-CoV infections during the Hajj or Umrah, 21% (78 people) said they would wear a mask, 14% (54 people) that they would take care in regard to hand washing and 0.5% (two people) that they would use hand disinfectants. People with university degrees were significantly more likely to take protective measures than others (chi-square test: 8.093; $p = 0.005$).

Discussion

Although this study cannot be generalised to the entire country, it was the first of its kind in Turkey. According to data from the Ministry of Hajj on 16 July 2015, 5,715,051 Muslims have visited Saudi Arabia to perform Umrah this year [5]. Since its emergence in 2012, the majority of MERS cases have been reported from Saudi Arabia [6]. Cases have also been reported from 25 other countries [7]. According to data from the World

Health Organization on 7 November 2015, there have been 1,495 confirmed cases with 528 deaths to date [8]. The first fatal case from Turkey occurred in 2014 [9].

On the basis of Saudi MoH recommendations, 64% of our survey participants should have postponed travelling, but none of them decided to postpone the pilgrimage. That proportion was 18% in an Australian in 2014 and 50% in a French study in 2013 [11,12].

More than half of the prospective pilgrims had never heard of MERS. In previous studies, 65% of French pilgrims and 35% of Australian pilgrims knew about MERS circulation on the Arabian Peninsula [11,12]. Most of those who were aware had learned of it through newspapers or television. Healthcare personnel and religious officials were much rarer sources of information. However, studies have shown that community leaders (e.g. Imams) and healthcare professionals play an important role in health promotion measures [13,14].

The awareness of healthcare personnel and religious officials concerning basic hygiene principles and measures should be increased through effective education and communication strategies. Health education programmes at the entry points to Saudi Arabia have been shown to improve pilgrims' knowledge [15]. Compared with one French (90%) and one Australian study (64%), the level of information concerning protective measures was generally insufficient [11,16]. This rate was 42% in our study, where most pilgrims did not understand the importance of MERS coronavirus infection. Only one in four of our participants intended to

TABLE 2

Knowledge of prospective Umrah and Hajj pilgrims about protective measures against Middle East respiratory syndrome and other respiratory diseases, Samsun, Turkey, May–July 2015 (n = 381)

Protective measures	Number	Percentage
Washing hands with soap and water	218	57
Using disposable/single-use materials	107	28
Not touching the mouth or nose before hand washing	121	32
Avoiding direct contact with sick individuals	184	48
Using masks, particularly in crowded areas	188	49
Using hand disinfectants	145	38

take precautions during their pilgrimage. Higher education level appeared to be linked to the intention to take precautions, but attitudes did not always change with knowledge. For example, Iranian pilgrims of old age and with low education level had little knowledge about health subjects, but they had a good health attitude and practice [17].

Attitudes and behaviours of prospective pilgrims can be improved by emphasising the importance of basic hygiene principles and measures through well-structured education programmes, both on MERS and other infectious diseases.

When pilgrims visit health centres for immunisations or mosques for religious rituals, these are occasions for health professionals and imams to inform about MERS.

Conflict of interest

None declared.

Authors' contributions

Mustafa Kürşat Şahin: study design, results interpretation, writing the manuscript; Servet Aker: statistics, analysing results, reviewing the manuscript; Ebru Kaynar Tunçel: data collection.

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