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Research Article

KNOWLEDGE, ATTITUDES, AND PRACTICES ABOUT MERS-COV AMONG ALGERIAN HAJJ PILGRIMS IN 2016

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Abstract

Objective: The present study has investigated the knowledge, attitudes, and practices regarding the transfer of MERS-CoV among the pilgrims coming to perform Hajj from Algeria.

Methods: A correlational approach was employed by the study by recruiting 845 individuals to assess their knowledge, attitude, and practices about MERS-CoV. A questionnaire was distributed for collecting relevant information from the Algerian hajj pilgrims and the results obtained through the questionnaire were tabulated and analyzed statistically using Statistical Package of Social Sciences (SPSS) version 23.

Results: The results have shown that knowledge among the Algerian pilgrims about MERS-CoV was weak (73.6%) and their attitude towards getting awareness about MERS-CoV was positive (71.4%). There was significant difference between years of education and knowledge about MERS-CoV (p -value = 0.001), and years of education and practices to minimize the spread of MERS-CoV among the pilgrims (p -value = 0.001).

Conclusion: Therefore, the study concluded that knowledge, attitude, and practices about MERS-CoV was satisfactory among the Algerian hajj pilgrims.

Keywords: Knowledge, Attitudes, Practices, MERS-CoV, Hajj Pilgrims.

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INTRODUCTION:

Middle East Respiratory Syndrome – Coronavirus (MERS-CoV) is a well-known causative agent that causes severe respiratory disease among the human beings. The incidence was firstly reported in the year 2012 after isolating a new β coronavirus from a patient in Saudi Arabia [1]. The patient had been suffering from severe pneumonia and multiple organ failure [2]. It was investigated that the virus belonged to lineage C from genus β -coronavirus through the sequencing of virus genome. Phylogenetically, the MERS-CoV relates to coronaviruses HKU4 and HKU5 [3]. Similar to the MERS-CoV, RNA coronavirus has been documented in the fecal sample of bat [4]. The genomic sequencing of MERS-CoV isolated from an individual suffering from deadly infection showed similarity with the genome that was extracted from his camel [5].

Approximately, half of the laboratory confirmed secondary cases were associated with the health-care settings concerned with the transmission of infection from one individual to another. In 2012, the outbreak of MERS-CoV clearly showed that these viruses are likely to cause fatal disease among the human beings with death rate of 43%⁶. Another study revealed comorbidities among 96% of the individuals infected by MERS-CoV in Saudi Arabia [1]. It has been confirmed that incubation period of MERS-CoV was 5.9 days after its outbreak in different regions of Saudi Arabia. Around 2 – 3 million people gather in Mecca, Saudi Arabia during Hajj; where Saudi Arabia is known as epicenter MERS-CoV, burdened with more than 80% of the global MERS-CoV burden.

Several cases have been reported among the pilgrims returning to their homeland after Umrah; although, none of the pilgrims complained of MERS-CoV in relation to Hajj. The main reasons resulting in transmission of this infection include; increased and frequent exposure to camel and its products or direct contact with the patients suffering from MERS-CoV [1]. It has been shown that around 35 – 65 % of the pilgrims visiting Saudi Arabia are unaware about the disease caused by the infection of MERS-CoV and its adverse effects. Therefore, the present study aims to investigate the knowledge, attitudes, and practices regarding the transfer of MERS-CoV among the pilgrims coming to perform Hajj from Algeria. The study results may help to improve the knowledge, attitude, and practice of health-care workers towards MERS-CoV.

Literature Review

Since 2012, Saudi Arabia has been facing a prolonged outbreak of MERS-CoV during the Hajj and Umrah events. The risk of importation of these

infection increases during Hajj due to large crowd of people gathered at a single place.

Knowledge and Attitude towards Transmission of MERS-CoV

Saudi Arabia has been known as the most afflicted country concerning the spread of MERS-CoV with remarkable rate of morbidity and mortality. A study conducted by Bawazir et al [7] assessed the knowledge of individuals regarding the spread of MERS-CoV. The results showed that the level of knowledge among the individuals was not satisfactory regarding the recognition of clinical manifestations of MERS-CoV disease. The clinical and epidemiological knowledge about the spread and development of MERS-CoV showed that majority of the respondents (66%) had satisfactory knowledge about it [7]. Another study conducted by Gautret et al [8] revealed that individuals were well-aware regarding the increased prevalence of MERS-CoV in Saudi Arabia. A study conducted in Riyadh showed that there was an increased level of proper hygiene among the pilgrims visiting Saudi Arabia. However, the knowledge about period of communicability was low among the participants (43.6%)⁹. It has been shown that majority of the participants (94%) stated that it was necessary to wash hands regularly and usage of respiratory etiquette measures was reported by 90% of the respondents along with increase in the hygienic awareness after interventional program conducted in Saudi Arabia [9].

A 3-month study was conducted among 141 registered nurses regarding their knowledge and attitudes towards the transmission of MERS-CoV. The results clearly showed that there was lack of necessary knowledge and skills for risk management concerning the spread of MERS-CoV. Khan et al [10] have found a slight increase among the people towards the awareness of MERS-CoV (73.2%). On the contrary, a study conducted in Makkah showed that only 32.4% of the respondents knew about the exposure and adverse outcomes associated with the spread of MERS-CoV [11]. A recent study conducted in Riyadh stated an increased rate of public awareness of the impact of MERS-CoV (91.6%) [12]. The study had adopted a unique method for the evaluation of clinical and epidemiological knowledge domains among the pilgrims visiting Saudi Arabia. Similarly, Al-Mohrej et al [13] conducted a study to investigate the awareness about MERS-CoV among the public. The results concluded that public awareness regarding MERS-CoV was satisfactory among the individuals recruited in the study. However, majority of the studies assessing the attitudes and knowledge of individuals regarding outbreaks of disease like MERS-CoV showed that

majority of the respondents did not have adequate knowledge about infectious agents causing MERS-CoV [14-17].

H₀: The knowledge and attitude of individuals towards the transmission of MERS-CoV was satisfactory.

H₁: The knowledge and attitude of individuals towards the transmission of MERS-CoV was not satisfactory.

Practices to Deal with MERS-CoV

The individuals coming for Umrah and Hajj are strictly advised to follow the hygienic measures to prevent the transfer of infections. A study conducted by Sahin et al [18] performed a general survey among the individuals visiting Saudi Arabia to determine the knowledge, attitude, and practices regarding the transmission of MERS-CoV. The results showed that majority of the individuals were not aware about the protective measures against MERS-CoV infection. Adequate infection control practices are needed to prevent the spread of MERS-CoV through personal protective equipment. A study conducted by Al-Saleh [19] showed increased compliance among the healthcare workers towards the infection control practices. Moreover, there was no difference in the practices adopted by the nurses and doctors for minimizing the spread of MERS-CoV. On the other hand, a study reported reduction in self-reported precautionary measures among 60% of the Saudi public and pilgrims visiting Saudi Arabia [20]. It is not easy to assess whether the gathered responses are actually being practiced as a result of negative attitudes and lack of knowledge among individuals towards MERS-CoV infection.

H₀: The practice of individuals to prevent the transmission of MERS-CoV was satisfactory.

H₁: The practice of individuals to prevent the transmission of MERS-CoV was not satisfactory.

MATERIALS AND METHODS:

The study has incorporated causal and correlational approach to assess the knowledge, attitude, and practices about MERS-CoV among Algerian Hajj pilgrims during the year 2016 in Makkah Mukarramah. At 95% confidence level, 90%

power of study, and 5% significance level, the sample size for present study was calculated to be 845 after dropping outs and invalid responses. The study population was selected from 45 hotels of Algerian pilgrims. A questionnaire was constructed for collecting demographic data, source of information about MERS-CoV, knowledge about causative agents and mode of transmission of MERS-CoV, and attitude and practices towards the complexity of MERS-CoV.

The questionnaire was distributed among the participants and the voluntary completion of the questionnaire was considered as the consent of participants. The survey was kept anonymous. The questionnaire was used to obtain data regarding the knowledge, attitude, and perception of respondents regarding MERS-CoV. It also assessed their willingness for utilizing the preventive measures during Hajj season. The results obtained through the questionnaire were tabulated and analyzed statistically using Statistical Package of Social Sciences (SPSS) version 23.

Ethical Considerations

Ethical approval was obtained from institutional ethical committee of ZMZM volunteering commission ; reference number was HAPO-02-K-012-2017-03- 356.

RESULTS:

The present study has discussed a major health problem, MERS-CoV faced by the Algerian pilgrims in Saudi Arabia. A total of 845 individuals were recruited in the study to evaluate the knowledge, attitude, and practices towards MERS-CoV among the individuals. The demographic detail of the individuals has been narrated in table 1. Majority of the individuals (39.29%) were greater than 60 years of age, among which 87.81 were males. All of the respondents belonged to Algeria and majority of them (80.24%) had come to perform Hajj for the first time. Among the recruited participants, 71.01% did not suffer from any chronic disease; however, 13.61% of the individuals were suffering from diabetes mellitus (Table 1).

Table 1: Demographic detail of the participants

Measures	N	%
Age		
<40	132	15.62
40-50	180	21.30
50-60	201	23.79

>60	332	39.29
Gender		
Male	742	87.81
Female	103	12.19
Nationality		
Algerian	845	100.00
Hajj for		
first time	678	80.24
second time	96	11.36
third time	28	3.31
more than three	43	5.09
Where do you live?		
Big City	585	69.23
Small city	162	19.17
Village	94	11.12
Rural	4	0.47
Chronic diseases		
Non	600	71.01
Diabetes	115	13.61
HT	69	8.17
Chronic Infectious diseases (HIV- Hib)	1	0.12
Cardiovascular diseases	15	1.78
CNS disorder	1	0.12
Skin diseases	1	0.12
Mobility disorder	3	0.36
GIT diseases	3	0.36
Multiple	37	4.38

The knowledge about MERS-CoV among Algerian Hajj pilgrims was assessed on the basis of scale ranging from weak to high. The results depicting in table 2 clearly show that knowledge among the Algerian pilgrims about MERS-CoV was weak (73.6%). However, the attitude of these individuals

was positive towards getting awareness about MERS-CoV (71.4%). The results have also shown that hygiene practices adopted by the pilgrims was satisfactory to minimize the transmission of infectious diseases (98.6%).

Table 2: Knowledge, Attitude, and Practices about MERS-CoV among Algerian Hajj Pilgrims in 2016

	N	%	Range	Mean±SD
Knowledge				
Weak	622	73.6		
Average	203	24.0		
High	20	2.4	0-15	5.471±2.968
Practices				

Unsatisfactory	12	1.4		
Satisfactory	833	98.6	0-5	1.319±0.576
Attitude				
Negative	242	28.6		
Positive	603	71.4	0-8	2.407±1.786

Table 3, 4, and 5 have shown the correlation between years of education of the recruited individuals and knowledge, attitude, and practices about MERS-CoV. The results showed that there was significant difference between years of education and knowledge

about MERS-CoV (p-value = 0.001), and years of education and practices to minimize the spread of MERS-CoV among the pilgrims (p-value = 0.001) (Figure 1).

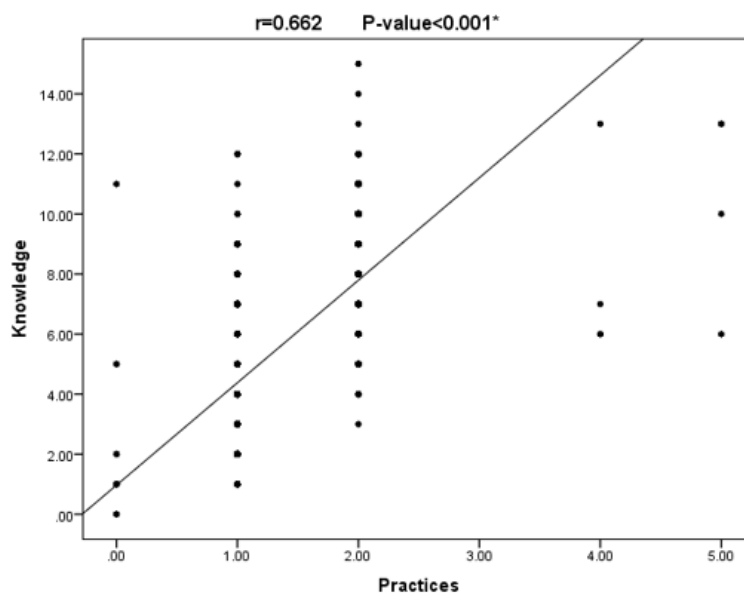


Figure 1: Correlation shown among knowledge, attitude, and practices for MERS-CoV among the Algerian Hajj Pilgrims

Table 3: Correlation between years of education and knowledge

Demographic data		N	Knowledge			F or T	ANOVA or T-test	
			Mean	±	SD		Test value	P-value
Age	<40	132	6.182	±	3.026	F	14.468	0.000
	40-50	180	6.033	±	2.946			
	50-60	201	5.831	±	3.007			
	>60	332	4.666	±	2.754			
Gender	Male	742	5.500	±	2.967	T	0.762	0.446
	Female	103	5.262	±	2.987			
Hajj for	First time	678	5.468	±	2.901	F	0.906	0.438
	Second time	96	5.281	±	3.389			
	Third time	28	6.321	±	3.278			

	More than three	43	5.395	±	2.813			
Residence	Big City	585	5.691	±	3.004	F	6.871	0.000
	Small city	162	5.370	±	2.910			
	Village	94	4.234	±	2.533			
	Rural	4	6.500	±	3.109			
Correlation between Years of Education and Knowledge		r	0.339					
		P-value	<0.001*					

Table 4: Correlation between years of education and attitude

Demographic data	N	Attitude			F or T	ANOVA or T-test		
		Mean	±	SD		Test value	P-value	
Age	<40	132	2.492	±	1.801	F	0.794	0.497
	40-50	180	2.228	±	1.517			
	50-60	201	2.438	±	1.717			
	>60	332	2.452	±	1.950			
Gender	Male	742	2.377	±	1.777	T	-1.300	0.194
	Female	103	2.621	±	1.842			
Hajj for	First time	678	2.440	±	1.784	F	1.514	0.210
	Second time	96	2.469	±	1.919			
	Third time	28	1.786	±	1.228			
Residence	More than three	43	2.163	±	1.772	F	0.699	0.553
	Big City	585	2.438	±	1.820			
	Small city	162	2.235	±	1.447			
	Village	94	2.521	±	2.109			
	Rural	4	2.250	±	0.500			
Correlation between Years of Education and Attitude		r	-0.043					
		P-value	0.326					

Table 5: Correlation between years of education and practices

Demographic data	N	Practices			F or T	ANOVA or T-test		
		Mean	±	SD		Test value	P-value	
Age	<40	132	1.394	±	0.589	F	11.636	0.000
	40-50	180	1.456	±	0.663			
	50-60	201	1.378	±	0.580			
	>60	332	1.181	±	0.483			
Gender	Male	742	1.329	±	0.588	T	1.263	0.207
	Female	103	1.252	±	0.479			
Hajj for	First time	678	1.319	±	0.572	F	0.054	0.983
	Second time	96	1.323	±	0.673			
	Third time	28	1.357	±	0.488			
Residence	More than three	43	1.302	±	0.465	F	4.875	0.002
	Big City	585	1.366	±	0.596			
	Small city	162	1.253	±	0.538			
	Village	94	1.160	±	0.447			
	Rural	4	1.000	±	0.816			
Correlation between Years of Education and Practices		r	0.242					
		P-value	<0.001*					

DISCUSSION:

The results have shown that knowledge about MERS-CoV was weak among the Algerian pilgrims; whereas, their attitude and adoption of hygienic practices was satisfactory. The distribution of socio-demographic characteristics of the participants showed an increasing extent of males. Similar to the results of the present study, a study conducted by ALdowyan et al [21] showed that 20% of the participants were not aware about the causative agent of MERS-CoV. The knowledge of individuals about etiology of MERS-CoV is an important step of patient education. The individuals would understand the transmission of disease and its preventive measures, if they are made aware about the cause of the disease. It has been shown that knowledge and attitude of females was better as compared to males. Studies have shown increased level of proper hygiene practices and positive attitude among the population [10, 12, 21].

The study conducted by Sampathkumar [22] reported that human is the source of transmission of MERS-CoV by tactile contact with an infected individual and contact with contaminated surfaces. People need to be made aware about different modes of transmission of MERS-CoV to prevent the infection transmission. The domain of disease treatment is considered as the most identified gap in knowledge among the individuals. A study showed that around 31.1% of the individuals knew about the vaccine that was used to prevent the development of MERS-CoV [21]. In the same context, 26.6% were satisfied regarding the usage of supportive treatment for MERS-CoV and only 19% stated that they were not aware about any treatment for MERS-CoV [21]. In general, majority of the individuals have positive attitude towards decreased consumption of camel's milk or meat as it is considered as a source of developing MERS-CoV; although, none of the studies have confirmed that MERS-CoV is transmitted due to consumption of milk or meat from camel.

The knowledge among individuals regarding the incubation time of MERS-CoV in human body was not satisfactory as 41% of the individuals answered it incorrectly [23]. This clearly depicts the necessity of revealing the aspect of virus epidemiology for the healthcare providers because it is beneficial for surveillance of infectious diseases. Regarding the attitudes of healthcare providers towards the transmission of MERS-CoV, majority of them revealed negative attitude towards MERS-CoV [11]. Positive attitude among the individuals was found about the use of face mask in huge gatherings and importance of notification. Moreover, a study conducted by Khan et al [10] revealed positive

attitude among the individuals regarding the protective use of equipment, while dealing with MERS-CoV. Overall, the present study showed that knowledge, attitude, and practices about MERS-CoV was satisfactory among the Algerian Hajj pilgrims.

The present study has assessed the knowledge, attitude, and practices about MERS-CoV among the Algerian hajj pilgrims. The study has also assessed the correlation between level of education of the participants and knowledge, attitude, and practices about MERS-CoV among the Algerian hajj pilgrims. The results have concluded that knowledge, attitude, and practices about MERS-CoV was satisfactory among the Algerian hajj pilgrims. There was no significant difference between years of education and attitude of individuals about the transmission of MERS-CoV. This shows that there is a knowledge gap between the actual and desired knowledge and awareness among the pilgrims visiting Saudi Arabia at the time of Hajj. This might impose adverse impact on the suspected and confirmed cases of MERS-CoV. There is a need for interventional programs for improving the knowledge and attitude of individuals towards the infection that will reflect on the overall health of the pilgrims.

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Conflict of Interest

The authors declare no conflict of interest.

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