

Assessment of Knowledge, Attitudes and Practices Concerning Travel Health among Hajj Pilgrims (1439 H- 2018 G) at Prince Mohammad bin Abdulaziz International Airport in AL-Madina, Saudi Arabia

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Abstract

Aim: The Hajj pilgrimage, the world's largest annual mass gathering, is held in the Kingdom of Saudi Arabia (KSA). The Saudi Arabian Ministry of Health (MoH) issues entry visa requirements and recommendations for Hajj pilgrims visiting the country. Vaccinations, health checks, and specific immunizations are all recommended either at or before entering KSA.

We assessed Hajj pilgrims' knowledge, attitude and practices regarding preventive, curative, hygienic and health promoting measures.

Subjects and Methods: We administered a questionnaire to a cross-section of Hajj pilgrims(2018 G)traveling through Prince Mohammad bin Abdulaziz International Airport in Al-Madina, KSA. Variables collected included demographics, Hajj health preparations, and knowledge and attitudes towards travel-related health behaviors.

Results: Of 101 respondents, 20% were Saudi and 64%were male. Regarding travel profile, 75% were attending hajj for the first time. About half (52%) stayed in KSA for more than 2 weeks. Knowledge regarding travel health of respondents was high: 82% scored as excellent and 11% scored as good. Positive attitude toward travel medicine was reported by 60% of participants; 56% of them sought pre-travel advice. Regarding health protection behaviors, 79%reported using protective measures against respiratory infections, 70%for insects, 95%for food and waterborne Diseases, 99%against heat-related conditions and 100%for injuries.

Conclusion: Despite the health criteria for obtaining Hajj visas and the documented health risks associated with attending Hajj, we discovered that less than half of participants received pre-travel advice. To ensure that Hajj pilgrims have a secure and healthy experience in the Kingdom, we recognized the need for continued education and promotion of health preventive measures. This research could be used to help countries establish Hajj health systems, which would be immensely helpful and would go a long way toward reducing Hajj mortality and morbidity, as well as associated burdens.

Keywords: Travel health, Hajj, knowledge, attitude, practice, pilgrims, Saudi Arabia

Abbreviations

KSA: The Kingdom of Saudi Arabia

MOH: Ministry of health

MERS-CoV: Middle Eastern Respiratory Syndrome Corona Virus

KAP: Knowledge, Attitudes, and Practices

1. Introduction

WHO defines a mass meeting as a planned or unplanned event that draws a large number of people and places a burden on the host population, city, or country's health planning and response capabilities(WHO, 2015).

Infectious diseases spread, exacerbation of non-communicable diseases, and illnesses linked to climate change are

all threats associated with large-scale sporting and religious activities (Smallwood et al., 2014). Every year, the Hajj pilgrimage takes place in the Kingdom of Saudi Arabia (KSA), which is the world's largest annual mass gathering (Memish et al., 2014).

The Saudi Arabian government takes a well-coordinated, cross-sectoral approach to the Hajj's planning, coordination, public health, and safety concerns. The preparation for the next Hajj begins soon after the current Hajj ends, and the KSA Ministry of Hajj and Ministry of Health work closely with the governments of all countries sending pilgrims to the KSA (Shafi et al., 2016).

Each year, the Ministry of Health (MoH) of the Kingdom of Saudi Arabia issues the requirements and recommendations for entry visas relevant to pilgrims and seasonal workers who intend to visit KSA during forthcoming Hajj season. Requirements and recommendations may differ from year to year. These Recommendations include pre-travel health regulations and advice about vaccinations, health checks, and specific immunizations at the port of entry (Saudi Ministry of Health, 2018).

The risk of contracting a travel-related infectious disease depends not only on the traveler's destination, length of stay, and scheduled activities, but also on their personal risk profile (Toovey, Jamieson, & Holloway, 2004a).

Many factors influence travelers' ability to adapt, cope, and survive, including personality and experience, which vary by age, gender, culture, social status, education, and health (Cossar, 2003). The awareness, behaviors, and activities (KAP) of a traveler toward the prevention of travel-related infectious disease is generally presented as one of the key determinants of the traveler's personal risk profile. Knowledge is generally defined as an accurate risk perception in KAP studies, whereas attitude is traditionally defined as either expected risk-seeking or risk-avoiding actions. Finally, practice is described as the rate of protection against a particular infectious disease associated with travel (Toovey et al., 2004a).

1.1 Rationale

Based on our best of knowledge, this is the first study provides information on Knowledge, attitudes and practices regarding travel health among Hajj pilgrims.

Relatively little is known about how travelers know and perceive the health risks associated with travel and how they utilize preventive measures before and while traveling abroad. This research may be seen as a tool for a well-intentioned strategy. This study may be a tool for a deliberate political will to motivate countries to develop Hajj health systems, which would be extremely beneficial and go a long way toward reducing Hajj mortality and morbidity, as well as related burdens.

1.2 Aim & Objectives

To assess knowledge, attitude and practice of pilgrims about preventive, curative, hygienic and health promoting measures before and during the hajj season (1439H-2018G) at Prince Mohammad bin Abdulaziz International Airport about travel health in Al-Madina.

2. Methodology

2.1 Study Design

A cross-sectional survey

2.2 Study Setting

Hajj terminals and international terminals at Prince Mohammad bin Abdulaziz International Airport in Madina

2.3 Study Time & Duration

Hajj season 1439 H (2018 G)

2.4 Target Population

Hajj pilgrims arriving at Prince Mohammad bin Abdulaziz International Airport in Madina.

2.5 Sample Size

A stratified random sample was assumed to include the top eleven pilgrim contributing nations that represent more than 75% of all pilgrims. The proportion from each stratum (nation) depends on the quota granted to each country by the Saudi Ministry of Hajj and Umrah (about 1000 pilgrims for each million Muslim in each country) (Saudi Ministry of Health, 2018). The participants were from Indonesia, Pakistan, India, Bangladesh, Egypt, Nigeria, Turkey, Saudi Arabia, Sudan, Yemen, Algeria,

Assuming that good knowledge of pilgrims 80% and in order to achieve 95% confidence interval level with error

less than 10%, so the sample size will be 62 according to the following equation:

$$n = \left(\frac{Z_{\alpha/2} \cdot \sqrt{p \cdot q}}{E} \right)^2$$

Where:

n-sample size, $Z_{\alpha/2}$ -critical value for the desired confidence degree usually. 1.96 (95%)

E-standard error, usually: $\pm 5\%$ of the proportion of cases (absolut precision)

p-propotion of favorable results of the variable in the population; q-propotion of unfavorable results in the population ($q=1-p$).

In order to compensate deviation from simple random sample the sample size was multiplied by 1.5 = 93 as this study is stratified random sample.

Final sample size was adjusted for expected attrition (10%). So, final sample size will equal 101 pilgrims.

2.6 Inclusion Criteria

Hajj pilgrims aged 18 years and more, coming from the top eleven pilgrim contributing nations based on hajj statistics 2017 and willing to participate.

2.7 Data Collection & Tool

A structured interview questionnaire was administered to willing participants. The principal investigator developed this questionnaire based on previous similar studies and a study of the requirements and recommendations for the 2018 hajj season, which are available on the Saudi Arabia Ministry of Health website (Memish et al., 2014)(Shafi et al., 2016)(Saudi Ministry of Health, 2018).The survey takes less than 20 minutes to complete. It was written in English, then translated into Arabic, Turkish, Urdu, Indian, and Bangladeshi languages to suit the needs of participants, and then back translated and checked by five experts then tested by pilot study on 20 participants to ensure comprehension & simplicity and its results were not be included in the study. It consists of four main sections, including questions about some sociodemographic factors, travel knowledge, attitude and Health seeking behavior (practice).

Six questions were used to assess an individual traveler's knowledge (Recommended hajj vaccinations, preventive measures against Middle Eastern Respiratory Syndrome Corona Virus (MERS-CoV) and other respiratory infections, Food and Water-Borne Diseases, Heat-Related Conditions and injury) responses was ranked as excellent, good, or poor, as follows: $\geq 80\%$ excellent, 60–80% as good, and $< 60\%$ as poor.

Attitude toward travel health was classified as positive (those who are willing to adopt risk-avoidance behavior) or negative (those who are intending to adopt risk-seeking behavior). Practice was assessed by asking pilgrims about travel health preparation before hajj regarding (travel preparation time, Seeking general information about Makka& hajj& its source, travel health or medical advice prior to departure& its time, Pre-travel preventive measures, Pilgrims with preexisting medical conditions, Ensure they have adequate Comprehensive travel insurance, first aid kit). while they were asked regarding travel health practice during Hajj about (*If you became ill, you sought medical advice?, take prophylactic or curative medications (e.g. antimicrobial) as ordered by doctor, use preventive measure against respiratory infections, against insects, Food and Water-Borne Diseases, Heat-Related Conditions and Use Injury prevention measures*).

2.8 Data Analysis

SPSS for Windows version 22 statistical software was used to enter, code, and analyze the data. The appropriate statistical tests were used. The appropriate statistical tests were used. Normality of data was first tested by one sample K-S test. Parametric data were expressed in mean \pm standard deviation. Non-parametric data will be displayed in median and interquartile range. In addition, independent t test will be used to compare means for continuous parametric variables of each two different groups. Also, Mann-Whitney U test (z) will be used to compare non parametric continuous variables in two different groups. Pearson Chi-square tests will be used to compare the categorical variables between the both comparative groups. They will be presented in frequency tables and/or graphs as appropriate.

p -value < 0.05 will be considered as statistically significant.

3. Results

Of 101 respondents, 20 (19.8%) were Saudi and 65(64.4%) were male. More than half of participants were married and their age ranged between 30 and 50 years. Regarding travel profile, 76 (75%) reported that they were attending hajj for the first time and travel related health preparation time was less than 2 weeks in 43(42.6%) of participants while source of travel related health information was mainly from internet . About half (52%) stayed in KSA for more than 2 weeks (Tables 1 & 4).

Respondents had a high level of knowledge about travel health: 82 percent scored excellent (correct answers above 80 percent of questions), 11 percent scored good (correct answers 60–80 percent), and 8% scored bad (correct answers less than 60 percent). Participants with a positive attitude toward travel medicine (those willing to adopt risk-avoidance behavior) accounted for 61 (60%) of the number, while 56 (56%) sought pre-travel advice (Tables 2 & 3).

The age of participants ranged between 30 and 50 years, married pilgrims, and international pilgrims ($p= 0.001$, 0.003 , and 0.0001 respectively) were factors associated significantly with excellent travel related health knowledge, while those associated significantly with positive attitude (those willing to adopt risk-avoiding behavior) were working pilgrims and those with educational qualifications university and above ($p= 0.0001$ and 0.0006 respectively) (Tables 2 & 3).

Table 1. Socio demographic characteristics of the respondents

Characteristic	Frequency	Percent
Age (years)		
<30	26	(25.8)
>50	15	(14.9)
30-50	59	(58.4)
Gender		
Female	35	(34.7)
Male	65	(64.4)
Marital status		
Divorced	3	(3.0)
Married	69	(68.3)
Single	25	(24.8)
widowed	4	(4.0)
Education		
Illiterate	2	(2.0)
Primary	3	(3.0)
Preparatory	10	(9.9)
Secondary	20	(19.8)
University and above	66	(65.3)
Job		
Employed	77	(76.2)
Unemployed	24	(23.8)
Residence		
Others (Foreign)	46	(45.5)
Saudi Arabia (Domestic, Saudi & Non- Saudi)	55	(54.4)

Table 2. Distribution of Travel health knowledge score among studied participants according to socio-demographic characteristics

Characteristic	Excellent (>80%) count (%)	Good (60–80%) count (%)	Poor (<60%) count (%)	Significance (p-value)
Gender				
Female	30 (36.6)	3 (27.3)	2 (25.0)	0.905
Male	51 (62.2)	8 (72.7)	6 (75.0)	
Marital status				
Divorced	2 (2.4)	0 (0.0)	1 (12.5)	0.003*
Married	61 (74.4)	3 (72.7)	5 (62.5)	
Single	16 (19.5)	8 (72.7)	1 (12.5)	
Widowed	3 (3.7)	0 (0.0)	1 (12.5)	
Age				
<30	16 (19.5)	8 (72.7)	1 (12.5)	0.012*
>50	14 (17.1)	0(0.0)	1 (12.5)	
30-50	50 (61.0)	3 (27.3)	6 (75.0)	
Education				
illiterate	2 (2.4)	0 (0.0)	0 (0.0)	0.531
Preparatory	8 (9.8)	0 (0.0)	2 (25.0)	
Primary	3 (3.7)	0 (0.0)	0 (0.0)	
Secondary University and high	14 (17.1)	3 (27.3)	3 (37.5)	
	55 (67.1)	8 (72.7)	3 (37.5)	
Job				
Employed Unemployed	62 (75.6)	9 (81.8)	6 (75.6)	0.899
	20 (24.4)	2 (18.2)	2 (25.0)	
Residence				
Others (Foreign)	45 (54.9)	1 (9.1)	0 (0.0)	<0.001*
Saudi Arabia (Domestic)	37 (45.1)	10 (90.9)	8 (100.0)	

* p- value less than 0.05 significant.

Table 3. Attitude of the studied group in relation to socio-demographic factors

Variable	Negative attitude count (%)	Positive attitude Count (%)	Significance(p-value)
Gender			
Female	14 (35.9)	21 (33.9)	0.720
Male	25 (64.1)	40 (64.5)	
Marital status			
Divorced	3 (7.7)	0 (0.0)	0.143
Married	24 (61.5)	45 (72.6)	
Single	10 (25.6)	15 (24.2)	
Widowed	2 (5.1)	2 (3.2)	

Age			
<30	10 (25.6)	15 (24.2)	0.958
>50	5 (12.8)	10 (16.1)	
30-50	23 (59.0)	36 (58.1)	
Education			
illiterate	0 (0.0)	2 (3.2)	0.001*
Preparatory	7 (17.9)	3 (4.8)	
Primary	3 (7.7)	0 (0.0)	
Secondary	12 (30.8)	8 (12.9)	
University and high	17 (43.6)	49 (79.0)	
Job			
Employed	24 (61.5)	53 (85.5)	0.006*
Unemployed	15 (38.5)	9 (14.5)	
Residence			
Others (Foreign)	21 (53.8)	25 (40.3)	0.184
Saudi Arabia (Domestic)	18 (46.2)	37 (59.7)	

* *p*- value less than 0.05 significant.

Table 4. Hajj relevant characteristics among the respondents

Characteristic	Frequency	Percent
Number of times attending Hajj		
First time	76	(75.2)
2-5	4	(4.0)
6-10	21	(20.8)
Length of current hajj stay		
< 1 week	24	(23.8)
1 week – 2 week	52	(51.5)
>2 week	24	(23.8)
Travel related health preparation time		
< 2 weeks		
> 4 weeks	43	(51.5)
2-4 weeks	29	(23.8)
	20	(23.8)
Source of information about Makka& hajj *		
Internet		
Travel agent	70	(96.3)
Travel book	59	(58.4)
Friends or relatives	52	(51.5)
	61	(60.4)

* Categories are not mutually exclusive.

The most frequent identified barriers to having pre-travel consultation were: “I didn't know where to find

information,” by 8 (8%) participants, “I already knew the required information,” by 7(7%), and and “I was too busy,” by 7(7%) (Figure 4).

In terms of health-prevention practices, 79 percent said they take precautions against respiratory illnesses, 70 percent said they take precautions against mosquitoes, 95 percent said they take precautions against food and waterborne diseases, 99 percent said they take precautions against heat-related conditions, and 100 percent said they take precautions against injuries (Tables 5 & 6).

Table 5. Travel health related- Practice among the studied pilgrims

Items	Yes	(%)
Did you seek travel health or medical advice prior to departure?	56	55.4
If you did not seek medical advice prior to travel: Why not? *		
Costs too much	3	3.0
Didn't know where to find information	8	7.9
I already knew the necessary information	7	6.9
No medical concerns	5	5.0
Other	1	1.0
Too busy	7	6.9
If yes, when did you get the pre-travel advice?		
	Yes	(%)
<2w	19	18.8
>4w	20	19.8
2-4w	17	16.8
Source of health advice*		
	Yes	(%)
Governmental health facility	26	25.7
Internet	8	7.9
Mass media	4	4.0
Private health facility	8	7.9

Table 6. Pre-travel preventive measures among the studied group

Pre-travel preventive measures	NO (%)	Yes (%)
Seeking general information about Makkah & hajj	19 (18.8)	82 (81.2)
Pre-travel preventive measures	14 (13.9)	87 (86.1)
Vaccine(s)	32 (32.7)	69 (68.3)
Antimicrobial	36 (35.6)	65 (64.4)
Over the counter medications		
Pilgrims with preexisting medical conditions:		
Consulted doctor for hajj suitability.	37 (36.6)	64 (63.4)
If on prescribed medications, they have a sufficient supply to cover their time abroad with some extra in case of delays	38 (37.6)	63 (62.4)
Carry a copy of their prescription.	34 (33.7)	64 (66.3)
Ensure they have adequate Comprehensive travel insurance	39 (38.6)	62 (61.4)
A first aid kit to help them manage common issues such as cuts and grazes, headaches and travelers' diarrhea	20 (19.8)	81 (80.2)

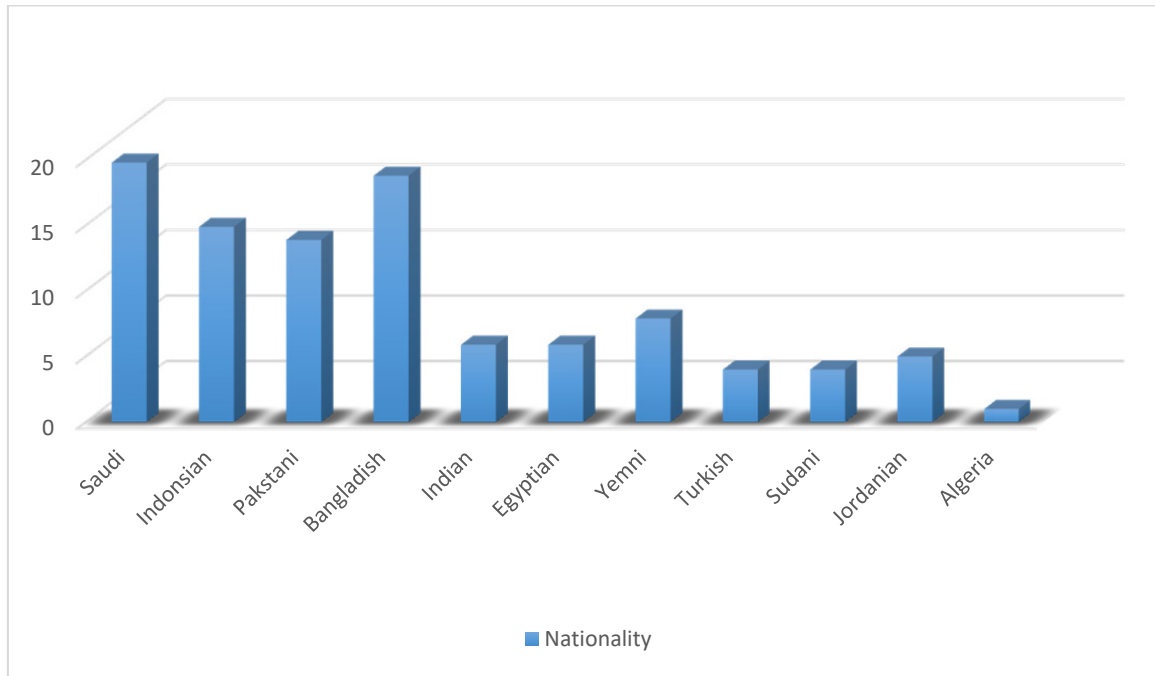


Figure 1. Showing distribution of participants according to nationality

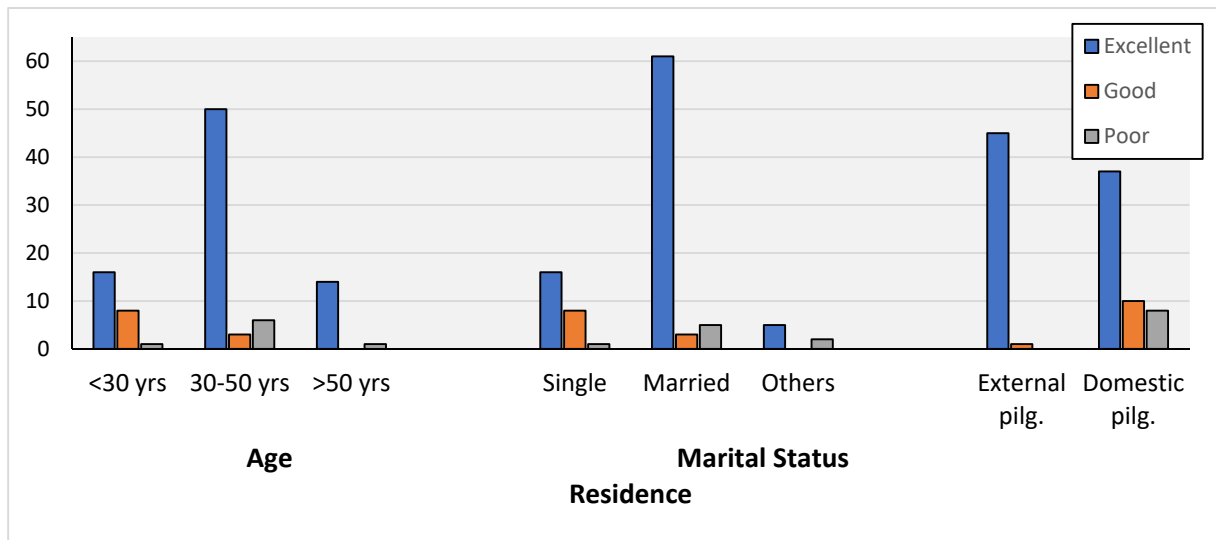


Figure 2. Sociodemographic factors with significant associations with excellent travel-related health knowledge score among study participants in Medina, 1439

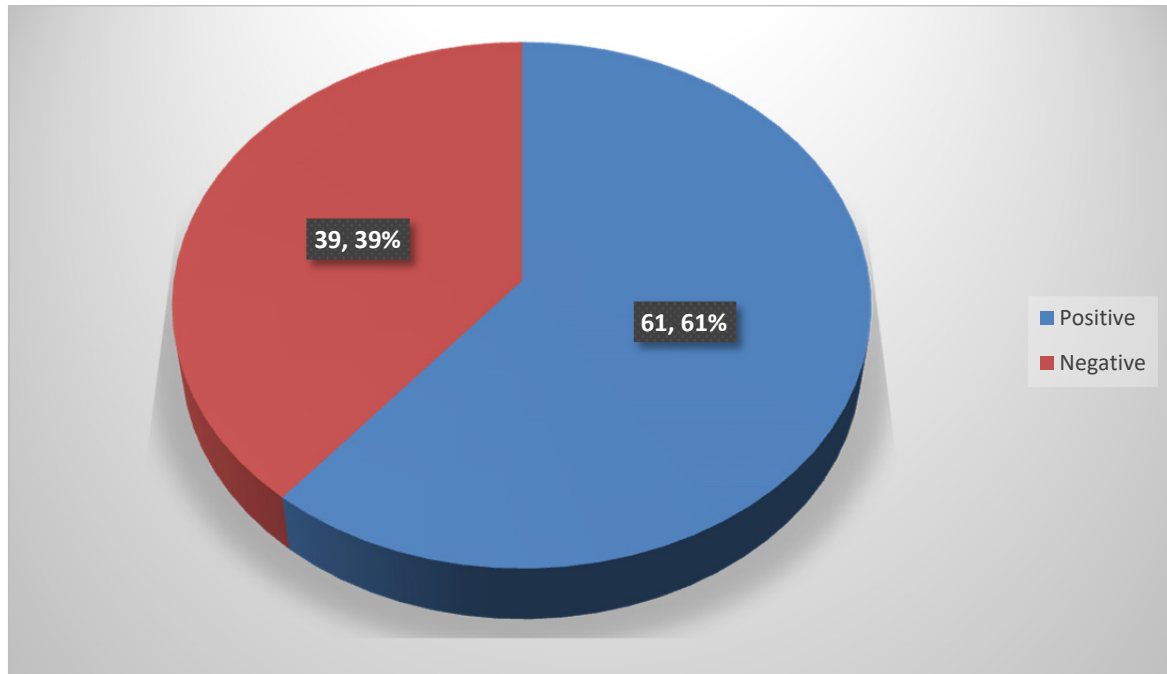


Figure 3. Showing Attitude of participants toward travel health

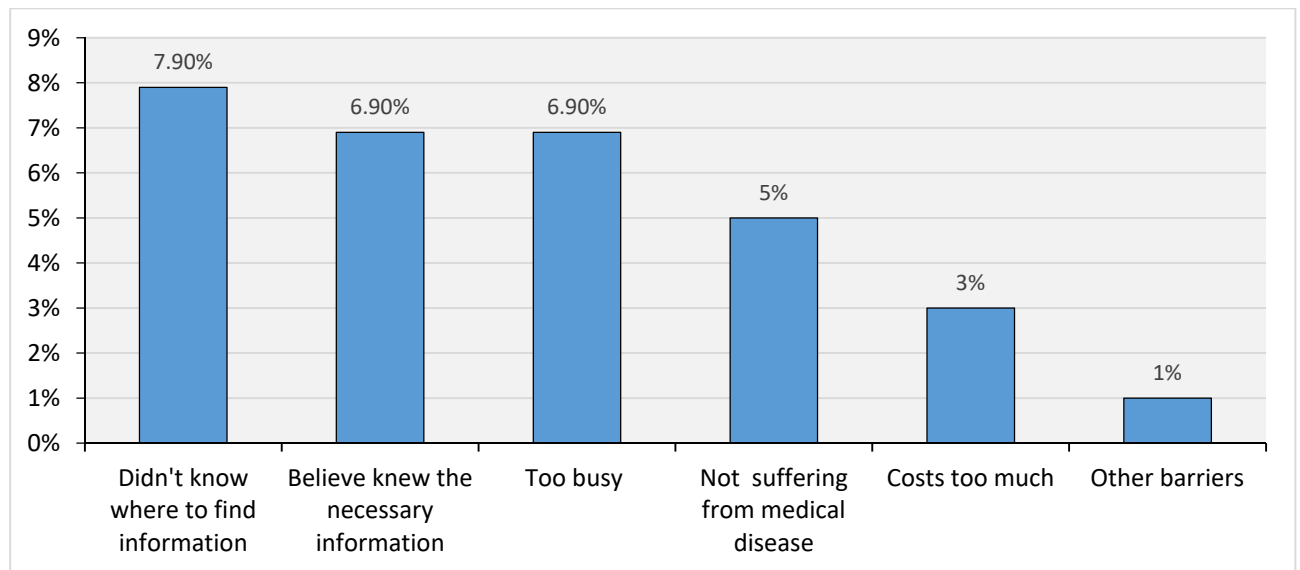


Figure 4. Barriers to pre-travel health-seeking practices among study participants

4. Discussion

The effect of travel medicine on health is inevitable. In travel medicine, infectious diseases have gained a lot of attention. This may seem rational, considering that travel medicine has historically concentrated on pre-travel vaccination and disease prophylaxis, as well as ongoing education for travelers (World Health Organization, 2012; International Society of Travel Medicine, 2006).

More than three-quarters of the participants in this study (82%) had outstanding travel health knowledge. This is similar to a study from Oman, which found that 77.5 percent of respondents had a good level of travel knowledge (Al-abri et al., 2019). This was higher than Malaysian figures, which showed that 54.1 percent of people had good knowledge (Chow et al., 2018). This may be due to the age of the participants in these studies. The average age of our study participants was 38.9 years, compared to 36.7 years in Oman and 34.9 years in Malaysia. There is room

for improvement as literature showed that older age subjects tend to have better travel health knowledge (Shawn & Wu, 2006).

Concerning health protection behaviors, more than 70 % of participants reported using protective measures against respiratory infections, insects, food and waterborne Diseases, heat-related conditions and for injuries. This figure is higher than the 6.9% recorded in an Oman study (Al-abri et al., 2019). This could be because 27.5% of the subjects in Oman study were females versus 34.7 % in our study. This could be explained by, females prefer take smaller risks in life than males. Moreover, Females are more aware of and cautious about their health and have better health seeking behavior than males (Chow et al., 2018).

For self-protection against many diseases associated with travel, risk perception is crucial (Chen, Tsai, Chen, & Lee, 2011). About 1 % of our participants had poor knowledge scores regarding the risk of travel-associated communicable diseases and methods of preventions. In addition, nearly 39% of travelers with a negative attitude toward travel medicine; denied their need to any preventive measures. This result points to a higher vulnerability to travel-related risks. In studies conducted in Gulf countries (Bener, 2017; Yoo et al., 2007; Alghamdi, Ibrahim, & Al-ghamdi, 2014) as well as developing countries (Yoo et al., 2007; Wilder-smith, Khairullah, Song, Chen, & Torresi, 2004; Hamer & Connor, 2004) low risk perception was found.

While more than half of pilgrims (60%) had a positive attitude toward travel medicine, travel medicine services were underutilized, as only 55.4 % of pilgrims sought travel health advice and more than 62 % of the study participants reported practice of any pre-travel preventive measures. Several studies have found that rates of use for pre-travel health advice range from as high as 86 percent in Johannesburg to as low as 19 percent in Qatar (Wilder-smith et al., 2004; Hamer & Connor, 2004; Herck, Zuckerman, Castelli, Damme, & Walker, 2003; Bener, 2017). Of those who did seek pre-travel health advice, the governmental travel clinic was the most important source of pre-travel health advice. This matched the results of a survey of Swedish and South African travelers (Herck et al., 2003; Toovey, Jamieson, & Holloway, 2004b; Dahlgren, Roo, & Steffen, 2006). On the other hand, In Korea (Yoo et al., 2007), on the other hand, the internet was the most popular source of pre-travel health advice.

The Knowledge, Attitudes, and Practices (KAP) of pilgrims may be influenced by both their personal characteristics and the characteristics of their journey. In this study, being adult (30–50 years) or married were the most important factors associated with excellent knowledge. This may be explained by the fact that adult are more familiar with computers and the Internet, which was rated as the most common source of pre-travel advice in this study. Although being married may be influenced by the fact that married people take fewer risks by default than single people, they are more health conscious and visit physicians more regularly (Drph & Pope, 2014). Moreover, being employed or higher educated were the significant factors associated with positive attitude regarding travel related health. This result can be explained by the fact that those groups who had this attitude were more likely to acquire information about the potential risks of travel diseases.

5. Conclusion & Recommendations

The findings of this study are generally in line with the current body of literature on traveler knowledge, attitudes, and practices. Regardless of where the study is conducted, travelers tend to be underprepared in general. Previous research has found that fewer than half of study participants seek pre-travel health care, which is consistent with the results of this study. Despite the health criteria for obtaining Hajj visas and the documented health risks associated with attending Hajj, we discovered that less than half of participants received pre-travel advice. To ensure that Hajj pilgrims have a secure and healthy experience in the Kingdom, we recognized the need for continued education and promotion of health prevention measures.

As a result, it is important to boost pilgrims' awareness of travel medicine through media coverage, basic health education materials, and travel websites. The best ways to improve this situation will be to provide travel agencies with educational materials developed by travel medicine clinics, as well as to play a role in referring travelers to travel clinics. To track the effectiveness of such measures, structured airport questionnaire surveys should be performed at regular intervals.

Our research has a number of limitations, including the fact that it only included pilgrims from the top eleven nations, which do not represent all travelers. Furthermore, it made no link between knowledge and practical use of travel health precautions.

Availability of Data and Materials

The data sets generated and analyzed during the current study are available from the corresponding author on reasonable request.

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Author Contributions

Eman Elsayed Abd-Ellatif: Conceptualization, Methodology, Software, data curation, Writing- Original draft preparation, Reviewing and Editing Lamy Alhumaidan, Lujain Alassaf, Lamis Alghamdi, Alwaleed Alharbi, Omar Albeladi: Data collection & curation and interpretation of the data. Asmaa ALQUSIBRI, Shady Abd El Rahman: Reviewing and Editing, Sami Almudarra: Supervision. All authors read and approved the final manuscript.

Statement of Ethics

Participants got informed consent before answering the questionnaire. An informed written consent was obtained from all participants after clarification of the objectives, confidentiality of data, voluntary involvement in the study. For those who were illiterates, the written consent was signed in the presence of a witness. In the questionnaire, there are no sensitive and private questions and their identity was anonymous. Responses was treated as confidential and no incentives were provided to enhance participation. In order to guarantee the respondents' anonymity, their names were not be taken. All data were stored directly onto an Excel spreadsheet, which was held in a password-protected laptop. Any gathered information were only be used for the purposes of this research. Ensuring no harm done to the participants during the study. In addition, an approval was taken from the ethical committee of the research center at King Fahad Medical City, Riyadh (NO. 18-0429E), attached as (appendix 2).

Consent for Publication

Not applicable

Competing Interests Statement

The authors declare that there are no competing or potential conflicts of interest.

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