

# Assessment of knowledge, attitudes, and practices regarding travel health among (King Abdulaziz) international airport travelers in Jeddah, Kingdom of Saudi Arabia 2019

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## ABSTRACT

**Background:** Travelers to different countries have endemic/pandemic diseases can increase the risk of exposure to various infectious agents and can facilitate their spread across borders. **Objectives:** To determine the levels of travel health knowledge, attitudes and practices among travelers at international airports of KSA. **Methods:** An observational cross-sectional study was conducted starting from 30 September, 2019 at the departure halls of King Abdulaziz International airport (KAIA). Representative sample adult travelers who were waiting to board were recruited. **Results and Discussion:** Good level of knowledge regarding travel health was observed among 28.2%. The majority of the participants (84.7%) got information about their destination prior to the trip. The main reported source of information was family/friends (53.8%). Negative health seeking behavior was observed among 70.8% of the participants. Purpose of the trip and duration of destination were significantly associated with health seeking behavior. Knowledge, attitude towards health information seeking behavior and practice-related to travel health among international travelers at King Abdulaziz International airport are insufficient.

**Keywords:** Attitudes, knowledge, practices of travel health

## Introduction

International traveling for various purposes has increased significantly. Considerably worldwide in frequency and geographical reach, with 940 million travelers in 2010 worldwide.<sup>[1]</sup> It exposes individuals to new cultural, psychological, physiological, and microbiological experiences.<sup>[2]</sup> Travelers to

different countries have endemic or pandemic diseases that can increase the risk of exposure to various infectious agents that can facilitate their spread across borders. For example, there are two recent rapid worldwide spread outbreaks include severe acute respiratory syndrome (coronavirus) and influenza A (H1N1).<sup>[3,4]</sup>

Returning from the destination with an infectious disease risk can affect more than individual health: it might also risk for relatives, people with whom they have close contact, or risk can be excess to the broader community area.<sup>[5,6]</sup>

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Prophylactic travel health measures with thus simple suitable precautions as vaccination, medications, and pre-travel consultation not only benefit individuals but occasionally the public health as well.<sup>[6]</sup>

The public health burden of these infectious diseases remains significant, and travelers are still having a risk for these diseases during international travel.<sup>[7]</sup>

Several surveys have demonstrated that a high proportion of travelers didn't know anything or some things about travel health-associated infectious disease risks, and many travelers didn't take the essential precautions of the World health organization (WHO) so, putting themselves at risk. Also, they have not received the immunizations, medications for prevention or treatment usually recommended in their respective countries of origin.<sup>[8,9]</sup>

The Kingdom of Saudi Arabia has 202 airports; four are international ones. A system of 24 regional airports connects the country's remote regions to the international airports and, consequently, to the rest of the world.<sup>[10]</sup> The most important international airport in Saudi Arabia is King Abdulaziz International Airport because it is considered the Hajj and Umrah pilgrims' gateway to the Holy Mosque in Makkah. Also, the Hajj terminal is considered the fourth-largest terminal in the world (510,000 square meters in size). General Authority of Civil Aviation (GACA) reported that (KAIA) international airport is the busiest airport in KSA and 97.3 Million international passengers in Saudi Arabia during 2018.

Since, there are only limited data about travel health awareness among travelers in Saudi Arabia, and relatively little knew about which travelers know about these diseases, seeking health behavior, prevention measure, and how they prepare before their departures, the present study was carried out to determine the levels of travel health knowledge, attitudes, and practices (KAP) among Saudi and non-Saudi travelers at King Abdulaziz international airports in KSA and identify where these travelers obtain travel health information.

## Subjects and Methods

An observational cross-sectional study was conducted from Sept 30 to October, 15<sup>th</sup>, 2019 at the departure halls of King Abdulaziz International airport (KAIA), Jeddah, Kingdom of Saudi Arabia (KSA). It has 35,822 passengers thousand in 2018, according to the General Authority of Civil Aviation (GACA) report. Eligible participants were all adults at least 18 years of age, Saudi and non-Saudi travelers who were waiting to board an international flight in departure halls. Inclusion criteria were any adult at least 18 years of age, male and female, Saudi and Non-Saudi travelers in Saudi Arabia and who is waiting to board an international flight in departure halls of (KAIA) international airport, Jeddah, the kingdom of Saudi Arabia while passengers of

regional and local flight and those who doesn't meet the inclusion criteria were excluded from the study.

The minimum sample size required is 384, and 10% of non-response was added; it reached 420. The computer program (Epi-info version "4.1.1") was used to calculate the sample. A simple random technique was applied. A power of 50% was used to detect a significant level of health knowledge among international travelers in KSA and 5% degree of precision and 95% confidence interval.

The researcher used a validated structured questionnaire to collect the research data. Permission was obtained from the owner of the questionnaire. It consists of three main sections, including: Section A: contained socio-demographic data, Section B: asked about travel preparedness, and Section C: asked about travel health

Regarding knowledge, attitude (health-seeking behavior), and the practice of travel health, scoring system was computed. A score was assigned to the right answers for knowledge, and other higher scores were assigned to statements of positive behavior or good practice. A score of zero was assigned for the incorrect answers in the knowledge section, and lower scores were assigned to statements of negative behavior or poor practice. Total scores and their percentage for all the three parameters were computed, and the participants scored <50% were considered having poor knowledge, negative attitude, or poor practice, whereas those scored 50% or more were considered having good knowledge, positive attitude, or good practice.<sup>[11]</sup>

The official approval from the Jazan institutional Review Board (IRB) was obtained. Getting approval from (KAIA) Airports Management Company, Jeddah, Saudi Arabia was obtained prior to data collection. In addition, all participants provided written informed consent before their participation, and no incentives were paid to them. Following the survey, no further contact was made with the participants. Finally, all collected data were kept confidential and it was used only for the purpose of research.

The analysis was conducted using SPSS version 25 (IBM, Armonk, NY, USA). Frequency distributions were used for basic descriptive statistics. Pearson's Chi-square tests were conducted for all cross-tabular data. A *P* value < 0.05 was considered significant.

## Results

The study included 404 travelers; the response rate was 96.1% from the total sample size (420). Table 1 presents their basic demographic and travel preparation characteristics. More than half (55%) of them were Saudis and 39.9% aged between 26 and 35 years. Almost two-thirds (66.1%) were males. Most of them (78.5%) were Saudi Arabia residents. The majority of the participants (92.8%) previously traveled outside KSA.

**Table 1: Basic demographic and travel preparation characteristics of the participants (n=404)**

	Frequency	Percentage
Nationality		
Saudi	222	55.0
Non-Saudi	182	45.0
Age (years)		
18-25	75	18.6
26-35	161	39.9
36-45	106	26.2
>45	62	15.3
Gender		
Male	267	66.1
Female	137	33.9
Country of residence		
KSA	317	78.5
Others	87	21.5
Previous traveling outside KSA		
Yes	375	92.8
No	29	7.2
Destination		
Africa	105	26.0
Asia	69	17.1
Middle East	162	40.1
Europe	43	10.6
USA/Canada	25	6.2
Number of companies (n=401)		
None	104	25.9
One	128	31.9
Two>two	69	17.2
	100	25.0
Is this the first time traveling to this country		
Yes	77	19.1
No	327	80.9
Duration of destination (n=402)		
≤02) week	200	49.7
>one week-one month	120	29.9
>one month-one year	67	16.7
>one year	15	3.7
Purpose of the trip		
Business	89	22.0
Tourism	148	36.6
Visiting friends/relatives	69	17.1
Education	28	6.9
Religious	23	5.7
Others	47	11.6
Is your primary destination a tourist/vacation area?		
Yes	319	79.0
No	85	21.0
Do you plan on visiting rural areas/countryside?		
Yes	241	59.7
No	163	40.3
What kind of sleeping arrangements did you make for this trip?		
Hotel/Resorts	228	56.5
Camping	15	3.7
Private home	127	31.4
Non-specific	21	5.2
Other	13	3.2

**Table 1: Contd...**

	Frequency	Percentage
Travel preparation time		
At least one month before trip	215	53.1
2-4 weeks prior	56	13.9
1-2 weeks prior	54	13.4
During the week of the trip	79	19.6

Regarding the place of destination, Middle East countries ranked first (40.1%), followed by Africa (26%), Asia (17.1%) Europe (10.6%), and America (6.2%). Number of companies was among 31.9% of the participants and exceeded two of 25%. Only 19.1% of the respondents stated that this is the first time to travel to this country. Duration of destination was one week or less among about half of them (49.7%), whereas it exceeded one year among 3.7% of them. Regarding the purpose of the trip, tourism ranked first (36.6%), followed by business (22%), and visiting friends or relatives (17.1%). The primary destination was a tourist/vacation area, among most of them (79%). More than half of the travelers (59.7%) planned on visiting rural areas/countryside. More than half of them (56.5%) booked hotel/resorts for their sleeping and prepared for their trip at least one month before it (53.1%).

Most of the participants (84.7%) got information about their destination before the trip. The main reported source of information was family/friends (53.8%), followed by internet (33.9%) whereas travel agent was the source in only 5% of cases as illustrated in Figure 1.

Most of the participants could recognize that hepatitis B and A vaccines should be given before traveling (77.9% and 76.7%, respectively). In contrast, only 39.9% and 44.8% reported that vaccines against rabies and typhoid fever should be given before traveling, respectively. Concerning foods that have the potential to cause illnesses if eaten while traveling outside Saudi Arabia, food from street vendors was the most frequently identified by the participants (66.8%) whereas ice cream, milk, and ice cubes were identified by only 14.4%, 14.1%, and 12.9% of the participants, respectively. Almost one-quarter (25.7%) of the participants planned to cover arms/legs while outside at night, whereas only 23% will use bug repellent, and 20.8% will sleep with windows closed or under mosquito nets [Table 2].

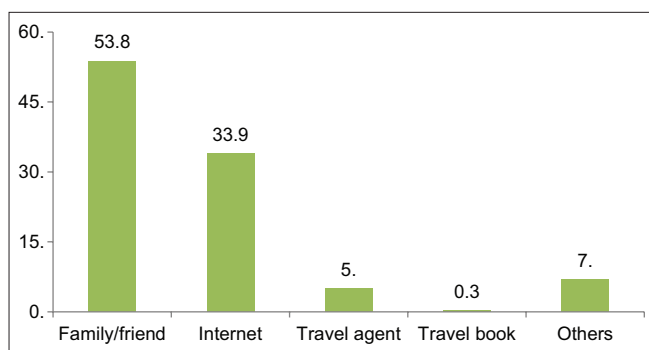
Overall, a good level of knowledge regarding travel health was observed among 28.2% of the participants, as illustrated in Figure 2.

It is realized from Table 3 that male travelers were more knowledgeable about travel health than females, as 31.5% of them compared to only 21.9% of females had good level of knowledge,  $P = 0.043$ . Other studies factors (nationality, age, country of residence, previous traveling outside KSA, destination, number of companies, the purpose of the trip, and duration of destination) were not significantly associated with the knowledge's level. Almost one-third of the participants (32.9%) sought travel health or medical advice before departure. More

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**Table 2: Response of the participants to knowledge statements regarding travel health**

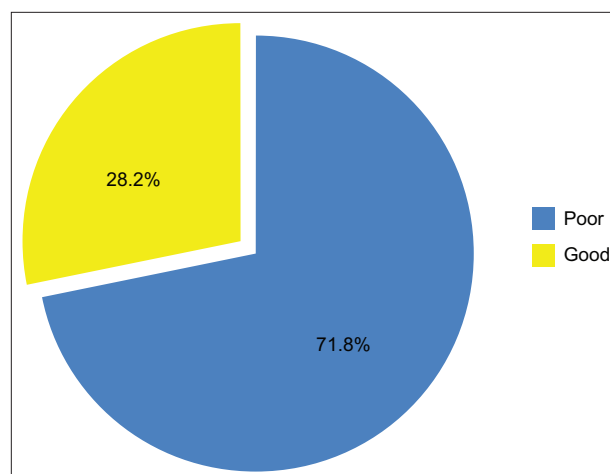
	Yes n (%)	No n (%)	Don't know n (%)
<b>Diseases/vaccine that should be given before traveling</b>			
Hepatitis A	310 (76.7)	80 (19.8)	14 (3.5)
Hepatitis B	315 (77.9)	75 (18.6)	14 (3.5)
MMR	224 (55.4)	161 (39.9)	19 (4.7)
Typhoid fever	181 (44.8)	184 (45.5)	39 (9.7)
Poliomyelitis	227 (56.2)	155 (38.4)	22 (5.4)
Yellow fever	194 (48.0)	164 (40.6)	46 (11.4)
Rabies	161 (39.9)	207 (51.2)	36 (8.9)
<b>Foods that have the potential to cause illnesses if eaten while traveling outside Saudi Arabia.</b>			
Ice cream	58 (14.4)	346 (85.6)	
Food from street vendor's	270 (66.8)	134 (33.2)	
Tap water	134 (33.2)	270 (66.8)	
Ice cubes	52 (12.9)	352 (87.1)	
Milk	57 (14.1)	347 (85.9)	
Sushi/Shellfish	92 (22.8)	312 (77.2)	
Raw fruit or vegetables	95 (23.5)	309 (76.5)	
<b>Do you plan on doing any of these things while</b>			
Using Bug Repellant	93 (23.0)	311 (77.0)	
Covering arms/legs while outside at night	104 (25.7)	300 (74.3)	
Sleeping with windows closed or under mosquito nets	84 (20.8)	320 (79.2)	



**Figure 1:** Source of information about participants' destination before his/her trip (n = 342)

than half of them (57.1%) sought advice four or more weeks before travel, whereas 17.3% sought it within the week of travel. Regarding the source of advice, the internet was the commonest one (34.6%), whereas governmental health facility was mentioned by almost one-fifth of them (21.8%) [Table 4]. Overall, a negative attitude towards travel health regarding seeking health advice was observed among 70.8% of the participants, as seen in Figure 3.

It was shown from Table 5 that the only factors significantly associated with the attitude towards travel health were the purpose of the travel as the religious purpose was more related to a positive attitude (43.5%), followed by tourism (37.2%). In contrast, the least purpose showing a positive attitude towards travel health was business (15.7%),  $P = 0.009$ . The other factor was the duration of destination as 39.2% of those whose duration ranged between more than one week to one month compared to 20% who exceeded one year expressed positive attitude,  $P = 0.029$ . Other studies factors (nationality, age, gender, country of residence, previous



**Figure 2:** Level of knowledge about travel health among the participants

traveling outside KSA, and destination, number of companies) were not significantly associated with the attitude's level.

Reasons for not seeking travel health were presented in Figure 4, ignorance of the source for getting information ranked first (39.5%), followed by having already necessary information (25.5%) and being too busy (18.5%).

Less than one-fifth (18.1%) of the participants received or purchased any preventative medications for this trip prior to travel. Of them, 47.9% received/purchased over the counter medications, and 37% received/purchased vaccines. More than half of the participants (52%) had health insurance [Table 6]. Overall, good practice regarding the travel health was found in only 13.1% of the participants as displayed in Figure 5.

**Table 3: Factors associated with participants' knowledge about travel health**

	Knowledge		P*	
	Poor n=290 n (%)	Good n=114 n (%)		
Nationality				
Saudi (n=222)	162 (73.0)	60 (27.0)	0.557	
Non-Saudi (n=182)	128 (70.3)	54 (29.7)		
Age (years)				
18-25 (n=75)	59 (78.7)	16 (21.3)	0.352	
26-35 (n=161)	109 (67.7)	52 (32.3)		
36-45 (n=106)	78 (73.6)	28 (26.4)		
>45 (n=62)	44 (71.0)	18 (29.0)		
Gender				
Male (n=267)	183 (68.5)	84 (31.5)	0.043	
Female (n=137)	107 (78.1)	30 (21.9)		
Country of residence				
KSA (n=317)	228 (71.9)	89 (28.1)	0.904	
Others (n=87)	62 (71.3)	25 (28.7)		
Previous travelling outside KSA				
Yes (n=375)	266 (70.9)	109 (29.1)	0.173	
No (n=29)	24 (82.8)	5 (17.2)		
Destination				
Africa (n=105)	82 (78.1)	23 (21.9)	0.118	
Asia (n=69)	42 (60.9)	27 (39.1)		
Middle East (n=162)	117 (72.2)	45 (27.8)		
Europe (n=43)	29 (67.4)	14 (32.6)		
USA/Canada (n=25)	20 (80.0)	5 (20.0)		
Number of companies				
None (n=104)	78 (75.0)	26 (25.0)	0.510	
One (n=128)	94 (73.4)	34 (26.6)		
Two-three (n=119)	84 (70.6)	35 (29.4)		
>Three (n=53)	34 (64.2)	19 (35.8)		
Purpose of the trip				
Business (n=89)	72 (80.9)	17 (19.1)	0.138	
Tourism (n=148)	97 (65.5)	51 (34.5)		
Visiting friends/relatives (n=69)	53 (76.8)	16 (23.2)		
Education (n=28)	21 (75.0)	7 (25.0)		
Religious (n=23)	16 (69.6)	7 (30.4)		
Others (n=47)	31 (66.0)	16 (34.0)		
Duration of destination (n=402)				
≤02 week (n=200)	146 (73.0)	54 (27.0)		0.407
>one week-one month (n=120)	88 (73.3)	32 (26.7)		
>one month-one year (n=67)	47 (70.1)	20 (29.9)		
>one year (n=15)	8 (53.3)	7 (46.7)		

\*Chi-square test

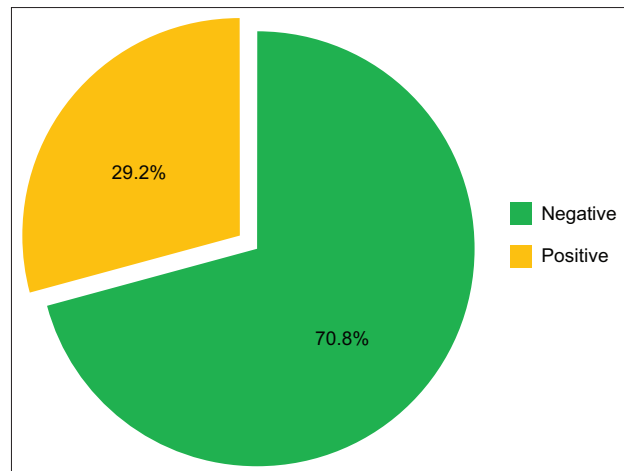
Travelers resident in KSA were more likely to have good practice regarding the travel health compared to those reside outside it (14.8% vs. 6.9). This difference was borderline insignificant ( $P = 0.052$ ). Other studies factors (nationality, age, gender, previous traveling outside KSA, destination, number of companies, purpose of the trip, and duration of destination) were not significantly associated with the practice's level [Table 7].

### Discussion

In the present study, most of the participants were males; this agreed with others.<sup>[11,12]</sup> This is might be attributed to the fact that males are more likely to travel locally and internationally than females.

**Table 4: Response of the participants to attitude statements regarding seeking health advice**

	Frequency	Percentage
Seek travel health or medical advice prior to departure		
Yes	133	32.9
No	271	67.1
Time of seeking advice (n=133)		
4 or more weeks prior to travel	76	57.1
2-4 weeks prior	19	14.3
1-2 weeks prior	15	11.3
Within the week of travel	23	17.3
Source of health advice (n=133)		
Governmental health facility	29	21.8
Private health facility	15	11.3
Internet	46	34.6
Literature review	4	3.0
Others	39	29.3



**Figure 3: Level of attitude towards seeking health advice among the participants**

In accordance with other studies,<sup>[5,10,12,13]</sup> tourism, business, and visiting family or friends were the most typical purposes of travel among travelers in the current study. Some others should know that the main propose of travel was for working<sup>[11]</sup> while in others, the main purpose was leisure.<sup>[14]</sup> These differences could be attributed mainly to the economic status of the country.

The main regions for destinations were Middle East countries, followed by Africa and Asia. In other studies, carried out in Gulf countries, Middle East countries ranked first, followed by Asian.<sup>[10,12,15]</sup> The difference might be attributed to the specific nature of King Abdulaziz International airport as a gateway for Hajj and Umrah pilgrims.

In the current study, a good level of knowledge regarding travel health (vaccination for preventable diseases, food safety, and preventive practices against insect bites) was observed among only almost one-quarter of the travelers, despite the finding that majority of the travelers have traveled before outside KSA, got travel information about destination before their trip, and almost

**Table 5: Factors associated with participants' attitude towards seeking health advice**

	Attitude		P*
	Negative n=286 n (%)	Positive n=118 n (%)	
Nationality			
Saudi (n=222)	150 (67.6)	72 (32.4)	0.115
Non-Saudi (n=182)	136 (74.7)	46 (25.3)	
Age (years)			
18-25 (n=75)	59 (78.7)	16 (21.3)	0.294
26-35 (n=161)	115 (71.4)	46 (28.6)	
36-45 (n=106)	70 (66.0)	36 (34.0)	
>45 (n=62)	42 (67.7)	20 (32.3)	
Gender			
Male (n=267)	184 (68.9)	83 (31.1)	0.246
Female (n=137)	102 (74.5)	35 (25.5)	
Country of residence			
KSA (n=317)	222 (70.0)	95 (30.0)	0.521
Others (n=87)	64 (73.6)	23 (26.4)	
Previous traveling outside KSA			
Yes (n=375)	265 (70.7)	110 (29.3)	0.842
No (n=29)	21 (72.4)	8 (27.6)	
Destination			
Africa (n=105)	76 (72.4)	29 (27.6)	0.156
Asia (n=69)	46 (66.7)	23 (33.3)	
Middle East (n=162)	123 (75.9)	39 (24.1)	
Europe (n=43)	25 (58.1)	18 (41.9)	
USA/Canada (n=25)	16 (64.0)	9 (36.0)	
Number of companies			
None (n=104)	79 (76.0)	25 (24.0)	0.207
One (n=128)	94 (73.4)	34 (26.6)	
Two-three (n=119)	76 (63.9)	43 (36.1)	
>three (n=53)	37 (69.8)	16 (30.2)	
Purpose of the trip			
Business (n=89)	75 (84.3)	14 (15.7)	0.009
Tourism (n=148)	93 (62.8)	55 (37.2)	
Visiting friends/relatives (n=69)	49 (71.0)	20 (29.0)	
Education (n=28)	20 (71.4)	8 (28.6)	
Religious (n=23)	13 (56.5)	10 (43.5)	
Others (n=47)	36 (76.6)	11 (23.4)	
Duration of destination (n=402)			
≤02 week (n=200)	146 (73.0)	54 (27.0)	0.029
>one week-one month (n=120)	73 (60.8)	47 (39.2)	
>one month-one year (n=67)	53 (79.1)	14 (20.9)	
>one year (n=15)	12 (80.0)	3 (20.0)	

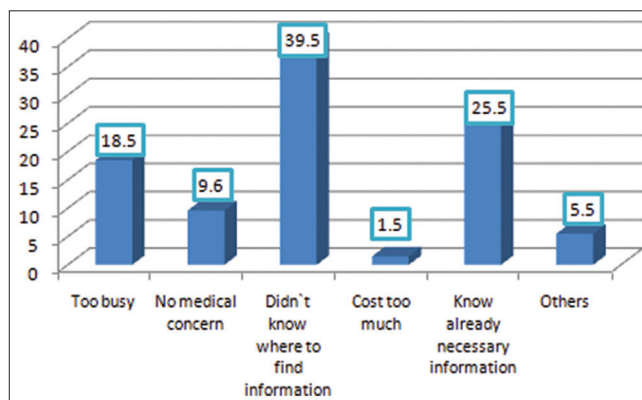
\*Chi-square test

half of them prepared for their trip at least one month in advance. The same inadequate level of knowledge regarding travel health was reported in Nigeria,<sup>[11]</sup> UAE,<sup>[15]</sup> Qatar,<sup>[16]</sup> and Oman.<sup>[12]</sup>

Most of the participants in the present study could recognize that hepatitis B and A vaccine should be given before traveling, whereas less than half of them could realize that vaccines against rabies and typhoid fever should be given before traveling. Concerning foods that have the potential to cause illnesses if eaten while traveling outside Saudi Arabia, ice cream, milk, and ice cubes were identified by a minority of the participants, respectively, and low perception was observed regarding protective practices against insect bites. Other studies showed the same results, low risk perception towards protection against

**Table 6: Practice of the participants regarding travel health**

	Frequency	Percentage
Prior to r travel date did you receiving or purchasing any preventative medications for this trip?		
Yes	73	18.1
No	331	81.9
If Yes, what did you receive/purchase		
Vaccines	27	37.0
Anti-malarial medications	11	15.1
Over the counter medications	35	47.9
Having health insurance		
Yes	210	52.0
No	194	48.0



**Figure 4: Reasons for not seeking travel health advice among the travelers**

infectious diseases indifferent countries; UAE,<sup>[15]</sup> Qatar,<sup>[16]</sup> and Oman,<sup>[12]</sup> China.<sup>[17]</sup>

Family/friends and internet were the main sources of seeking advice before travel among participants in the present study. Similarly, family/friends were the main source of information among Nigerian travelers.<sup>[11]</sup> Internet and private health facilities were the main sources in studies carried out in Oman<sup>[12]</sup> and Korea.<sup>[18]</sup> However, in Sweden and South Africa, general practitioners and travel health clinics were the main sources for health advice before the travel.<sup>[14]</sup> Therefore, increasing awareness of the travelers to consult physicians or travel health clinics is essential, particularly to those traveling to countries with high endemicity of infectious diseases.

In the current study, most of the travelers (70.8%) had a negative attitude towards advice-seeking behavior before the travel. In a similar study carried out in Oman,<sup>[12]</sup> the same questionnaire used in the present study; shown that more than half of the travelers had a positive attitude towards travel health. In the present study, almost one-third of the participants sought medical advice before the travel. In other studies, the rate of seeking advice before the travel ranged between 19% in Qatar to 86% in South Africa.<sup>[2,5,11,14,17,19,20-22]</sup>

The majority of travelers in the present study expressed poor practice regarding travel health as only 18.1% of them received

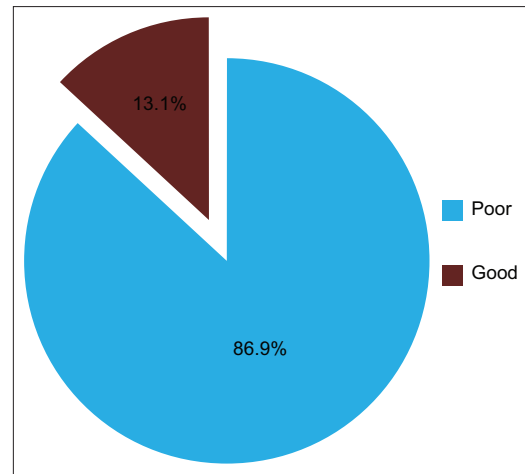
**Table 7: Factors associated with participants` practice regarding travel health**

	Practice		P*
	Poor n=351 n (%)	Good n=53 n (%)	
Nationality			
Saudi (n=222)	194 (87.4)	28 (12.6)	0.739*
Non-Saudi (n=182)	157 (86.3)	25 (13.7)	
Age (years)			
18-25 (n=75)	63 (84.0)	12 (16.0)	0.178*
26-35 (n=161)	135 (83.9)	26 (16.1)	
36-45 (n=106)	98 (92.5)	8 (7.5)	
>45 (n=62)	55 (88.7)	7 (11.3)	
Gender			
Male (n=267)	232 (86.9)	35 (13.1)	0.993*
Female (n=137)	119 (86.9)	18 (13.1)	
Country of residence			
KSA (n=317)	270 (85.2)	47 (14.8)	0.052*
Others (n=87)	81 (93.1)	6 (6.9)	
Previous travelling outside KSA			
Yes (n=375)	325 (86.7)	50 (13.3)	0.455 <sup>†</sup>
No (n=29)	26 (89.7)	3 (10.3)	
Destination			
Africa (n=105)	88 (83.8)	17 (16.2)	0.221*
Asia (n=69)	64 (92.9)	5 (7.2)	
Middle East (n=162)	142 (87.7)	20 (12.3)	
Europe (n=43)	38 (88.4)	5 (11.6)	
USA/Canada (n=25)	19 (76.0)	6 (24.0)	
Number of companies			
None (n=104)	87 (83.7)	17 (16.3)	0.077*
One (n=128)	117 (91.4)	11 (8.6)	
Two-three (n=119)	98 (82.4)	21 (17.6)	
>three (n=53)	49 (92.5)	4 (7.5)	
Purpose of the trip			
Business (n=89)	80 (89.9)	9 (10.1)	0.421*
Tourism (n=148)	128 (86.5)	20 (13.5)	
Visiting friends/relatives (n=69)	59 (85.5)	10 (14.5)	
Education (n=28)	21 (75.0)	7 (25.0)	
Religious (n=23)	21 (91.3)	2 (8.7)	
Others (n=47)	42 (89.4)	5 (10.6)	
Duration of destination (n=402)			
≤02 week (n=200)	179 (89.5)	21 (10.5)	0.277*
>one week-one month (n=120)	101 (84.2)	19 (15.8)	
>one month-one year (n=67)	55 (82.1)	12 (17.9)	
>one year (n=15)	14 (93.3)	1 (6.7)	

\*Chi-square test, <sup>†</sup>Fischer Exact test

or purchased any preventative medications for this trip before travel, including vaccines and malaria prophylaxis. In a previous Saudi study carried out among travelers in (KAIA) and King Fahad International airport (KFIA) in Dammam, also inadequate pre-travel practice was reported<sup>[23]</sup> in Oman,<sup>[12]</sup> only 6.9% of the travelers reported receiving/purchasing of any pre-travel preventive measures. Also, in Dubai, UAE, low uptake of travel vaccinations, and malaria Prophylaxis were indicated.<sup>[5]</sup> In Qatar, the knowledge, attitudes, and practices of business travelers concerning infectious disease prevention were suboptimal.<sup>[16]</sup>

In the current study, male travelers were more knowledgeable compared to females. A similar result has been observed in a study carried out in Oman.<sup>[12]</sup> Purpose of the trip, as well as



**Figure 5: Level of practice regarding travel health among the participants**

the duration of destination, were associated with travelers` attitude as those travel for business, and those their duration of destination will be a loner than a year were more likely to have a negative attitude towards travel health. In a study carried out in Oman,<sup>[12]</sup> being younger was the only predictor of a positive attitude (seeking pre-travel advice). Regarding practice, although not reaching a statistical significance level, being resident in KSA was associated with a higher rate of good practice. In Oman,<sup>[12]</sup> females expressed a higher percentage of good practice compared to males. At the Athens International Airport, male gender, unemployed status, those having an elementary level of education, traveling to visiting friends and relatives, and short duration of travel were significant determinants of not seeking pre-travel consultations.<sup>[24]</sup>

The study has a few limitations. It was conducted in the departure hall of only one airport in the Kingdom of Saudi Arabia, limiting the generalizability of results over other airports. The study didn't focus on Saudi travelers as it included also non-Saudi, they speak different languages other than English and Arabic. The educational level of the travelers was not investigated among independent variables. Despite those limitations, the study could have a public health role in exploring the importance of one of the neglected branches of medicine: travel medicine in our community that has a lot of travelers.

In conclusion, knowledge, attitude towards health information-seeking behavior and consequently practice-related to travel health among international travelers at King Abdulaziz International airport are insufficient. Regarding the place of destination, Middle East countries ranked first, followed by Africa and Asia. Regarding the source of health advice before the travel, the internet was the commonest one, whereas governmental health facility was mentioned by almost one-fifth of the travelers. Therefore, the following are recommended:

- Development of educational materials (leaflets, booklets, etc.) for international travelers to increase their awareness of the importance of seeking health advice prior to their trips

- The Ministry of Health should organize awareness campaigns on the importance of having travel vaccination and other preventive measures among international travelers.
- Develop and implement a well-structured travel medicine service to all international travelers in the KSA.
- Further study, including more airports and focus on Saudi travelers, mainly using a more comprehensive questionnaire, is recommended.

### Ethical considerations

The official approval from the Jazan institutional Review Board (IRB) was obtained.

The study was conducted by author at the airport after getting approval from (KAIA) Airports Management Company, Jeddah, Saudi Arabia.

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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