International Journal of Advanced Community Medicine

Abdulaziz Salman A Al Muaythir
Family Medicine Resident,
Department of Family Medicine,
King Fahad Medical, Riyadh,
Saudi Arabia

Shafi Hussain M Al Qahtani
Family Medicine Resident,
Department of Family Medicine,
Kharj Military Industries
Corporation Hospital, Kharj,
Riyadh, Saudi Arabia

Mohammed Fahad A Al Mujalli
Family Medicine Resident,
Department of Family Medicine,
King Fahad Medical, Riyadh,
Saudi Arabia

Jarman Saeed M Al Qahtani
Family medicine Consaltant,
MOH, MBBS, SBFM, ABFM,
MHA, ATP, Riyadh, Saudi
Arabia

Knowledge and attitude toward travel medicine among primary care physicians in cluster 2 primary care centers in Riyadh, Saudi Arabia

Abdulaziz Salman A Al Muaythir, Shafi Hussain M Al Qahtani, Mohammed Fahad A Al Mujalli and Jarman Saeed M Al Qahtani

DOI: https://doi.org/10.33545/comed.2022.v5.i1a.221

Abstract
Background: travel medicine deals with the prevention and management of health problems of travelers all around the world. Primary care physicians are the first point of contact in a healthcare system, and they are often consulted to provide medical pre-travel advice. In this study, we assessed the knowledge and attitude towards travel medicine among primary health care physicians working in Cluster 2, Riyadh, Saudi Arabia.
Methods: This was a cross-sectional survey study conducted among primary care physicians working in Cluster 2, Riyadh, Saudi Arabia during the year 2021. Data was collected through a self-administered questionnaire that has been developed and validated by the study authors and consisted of questions that assessed the knowledge and attitude towards travel medicine in addition to the participants' socio-demographic characteristics
Results: A total of 240 primary care physicians participated, 52.92% of them were males, and 74.58% were Saudi. Only 51.67% of them said that they are updated about travel medicine, and websites were the main source of information at 82.50%. The mean (±SD) of the overall knowledge score was 16.18(±3.58) indicating a suboptimal knowledge level. the knowledge level differed significantly according to only physicians' updates about travel medicine, and the source of information, being higher among those who are updated at 17.19 (±3.01) vs. 15.09 (±3.83), and those who get their information from websites like CDC at 16.45(±3.54). The mean overall attitude score was 38.75(±3.95), reflecting a high positive attitude. Saudi physicians showed a significantly higher positive attitude at 39.07(±3.78) compared to the non-Saudi ones at 37.82(±4.32), with a P-value of 0.03. Similarly, the score differed significantly by the physicians' position being the highest among consultants at 40.52(±2.54).
Conclusion: The current study revealed a suboptimal knowledge level and a positive attitude towards travel medicine among primary care physicians working in cluster 2 in Riyadh city, Saudi Arabia.

Keywords: Attitude, travel medicine, physicians, Saudi Arabia

Introduction

Travel Medicine is a branch of medicine wherein, it deals with the prevention and management of health problems of travelers all around the world. Globally, the number of international flight passengers has increased in recent decades, and the prevalence of travel-acquired illness is likely to rise in proportion to the predicted increase in international travel [1]. Saudi life has become increasingly reliant on travel. Every year, millions of Saudis go outside the kingdom for pleasure or work [2]. This, combined with a large expatriate population that frequently travels back to their home countries, makes travel-related diseases a major public health concern [2]. It also establishes the need for a travel medicine service to address travel-related diseases and other health concerns, such as the risks associated with long-haul flights [3]. Therefore, during pre-travel consultations, there is an urgent need to raise awareness of various health risks. Nonetheless, travelers' risk perceptions are important in risk communication and their response to pre-travel advice [4, 5]. Over the past few decades, pre-travel counseling has become an essential component of comprehensive family medicine. Effective counseling begins with an assessment of individual and itinerary-based risks, which is aided by an expanding set of evidence-based decision-support tools and resources [6]. Pre-travel consultation, including individual risk assessment, aims to address travelers' risks associated with their itineraries and minimize those risks by educating travelers and providing appropriate vaccination(s) and chemoprophylaxis [7].

Corresponding Author:
Abdulaziz Salman A Al Muaythir
Family Medicine Resident,
Department of Family Medicine,
King Fahad Medical, Riyadh,
Saudi Arabia

Travel medicine is a new field that has emerged as a result of the growing number of people who travel. However, practicing physicians have not placed enough emphasis on travel-related risks and issues [8]. Travel medicine is a complex practice; there are currently dynamic changes in global health risks and with increasing population mobility, emerging diseases, lifestyle diseases, and various other factors, all of which contribute to the complexity of travel medicine [8-10]. Primary care physicians are the first point of contact in a healthcare system, and they are often consulted to provide medical pre-travel advice [11]. Therefore, they must be aware of the changing epidemiology of travel-related diseases as well as the availability of specific new preventive and treatment measures [12]. Through the past few decades, some global surveys have been conducted to assess the quality of travel medicine practice among primary care physicians [12-18], and the results showed significant differences in the quality of advice provided by primary care physicians. In Riyadh, Saudi Arabia, a recently (2021) published study [19] showed that the knowledge, attitude, and practice of travel medicine among primary healthcare physicians are sub-optimal, and another one published in 2020 showed a gap in the knowledge and practices of primary health care physicians regarding pre-travel counseling for people with type 2 diabetes [2].

We conducted this study aiming to investigate the level of knowledge and attitude towards travel medicine among primary health care physicians working in Cluster 2, Riyadh, Saudi Arabia.

Methods
This was a cross-sectional survey study that has been conducted among primary care physicians working in Cluster 2, Riyadh, Saudi Arabia during the year 2021. Physicians who were working in other specialties or clusters were not included in the study.

The data collection tool for the current study was a self-administered questionnaire that has been developed and validated by the study authors after an extensive literature review of similar studies. The questionnaire was distributed to all primary care physicians who are working in 27 randomly selected primary care centers representing all locations of cluster 2 (C2) in Riyadh. There is a total of 54 primary care centers and 670 primary care physicians in cluster 2 (C2) in Riyadh.

The questionnaire consisted mainly of three sections, the socio-demographic one, and the other two sections included questions that covered the study aims and objectives of assessing the knowledge and attitude towards travel medicine.

The study has been conducted after taking ethical approval from the Institutional review board at KFMC with IRB Log Number 20-289. The aims and objectives of the study were explained, and the survey's participation was entirely voluntary. Physicians who accepted to participate were asked to sign a consent form. Participants were informed that their data will be kept anonymously, confidentially, and will be used for research purposes only.

Statistical analysis
Data were analyzed by using Statistical Package for Social Studies (SPSS 22; IBM Corp., New York, NY, USA). Continuous variables were expressed as mean ± standard deviation and categorical variables were expressed as

percentages. T-test and one way ANOVA were used for continuous variables. Chi square test was used for categorical variables. The Cronbach's alpha was used to assess reliability and internal consistency of the items in the questionnaire. A p-value <0.05 was considered statistically significant.

Results
The Cronbach's alpha value of the questionnaires was 0.722 which reflects acceptable reliability of the questionnaire. The socio-demographic characteristics of the study participants are shown in table (1). A total of 240 primary care physicians participated in the current study, more than half (52.92%) of them were males, and almost three-quarters (74.58%) were Saudi. The highest percentage (41.25%) of the participants were in the age group of <30 years. Residents represented 59.17% of the studied sample, and 38.33% have an experience of 2 to <5 years. Almost half of the participated physicians see 10-20 patients per clinic. When they were asked if they are updated about travel medicine, 51.67% answered "yes", and websites were the main source of information about travel medicine at 82.50%.

Assessment of the knowledge of primary health care physicians toward travel medicine is shown in table (2). Physicians showed poor knowledge level in regards to some points including contraindications for routine yellow fever vaccines where the correct answers did not exceed 60.4%, and the contraindications of COVID-19 vaccine where the correct answers did not exceed 72.9%. In addition, a very poor knowledge was found in the points regarding rabies vaccine " For rabies vaccinated person exposed to rabies, rabies immune globulin (RIG) is not needed, and only 2 further vaccines at days 0 and 3" and " Meningitis belt is in Sub-Saharan Africa", as they were correctly answered by only 34.2% and 43.3% of the physicians, respectively. The results also showed that around 40% of the participated physicians don't know that travelers to yellow fever endemic regions should be re-vaccinated every 10 years. Moreover, almost one-third of the physicians wrongly thought that they should advise a patient whose travel to the malaria-endemic region to take a vaccine (35%), and for traveler diarrhea, advise patient to take antibiotic prophylaxis (36.7%). The knowledge level of the other assessed points was mostly high as shown in the table.

The mean of the total score of knowledge of primary health care physicians toward travel medicine by demographic and travel medicine practice characteristics is shown in table (3). The mean (±SD) of the overall knowledge score was 16.18 (±3.58) (out of 23) indicating a suboptimal knowledge level. Such knowledge level differed significantly according to only two factors: physicians update about travel medicine, and the source of information, being higher among those who are updated at 17.19 (±3.01) vs. 15.09 (±3.83), and those who get their information from websites like CDC at 16.45(±3.54), with P values of <0.001, and 0.01, respectively. on the other hand, the knowledge level did not differ significantly by the other studied characteristics including age, gender, nationality, experience, or the number of patients seen, since all P values were >0.05.

The results of the current study revealed that the participating primary care physicians have a generally positive attitude towards travel medicine, as the highest percentage of them agree to the various types of health

advice given on travel medicine as shown in table (4). The highest positive attitude was for the point of Travel vaccines and Food and drinks hygiene at 95.85 and 95.4%, respectively. While the highest negative attitude was for the points of In-flight exercise and clothing at 11.7% and 10.8%, respectively.

The mean (±SD) of the overall attitude score was 38.75(±3.95) (out of 42), which reflects a high positive attitude towards travel medicine. Saudi physicians showed a significantly higher positive attitude towards travel medicine at 39.07(±3.78) compared to the non-Saudi ones at 37.82(±4.32), with a P-value of 0.03. Similarly, the score differed significantly by the physicians' position being the highest among consultants at 40.52(±2.54), and the lowest among general practitioners at 36.07(±4.45), with a P-value of 0.001. Data is shown in table (5).

Supplementary Table 1: Reliability for the items of the questionnaire

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Should the Health care providers advise patients to visit their physicians or a travel clinic minimum 4 to 6 weeks before departure to obtain necessary immunizations before travel?	73.09	45.10	0.12	0.722
Typhoid is transmitted by fecal contamination of food and water ?	72.93	43.93	0.20	0.718
For a rabies vaccinated person exposed to rabies, rabies immune globulin (RIG) is not needed, and only 2 further vaccines at days 0 and 3 ?	72.18	42.87	0.23	0.717
Yellow fever and meningococcal vaccines are required for travel into some countries?	73.04	43.82	0.25	0.715
Yellow fever is endemic to Sub-Saharan Africa and South America?	72.75	42.29	0.30	0.712
Travelers to yellow fever endemic regions should be re-vaccinated every 10 years ?	72.57	41.35	0.35	0.707
1/immunocompromised	72.62	40.39	0.47	0.697
2/egg anaphylaxis	72.25	42.16	0.38	0.706
3/age <9 months old	72.24	40.42	0.42	0.701
4/pregnancy	72.45	40.46	0.43	0.700
The "Meningitis belt is in Sub-Saharan Africa?	72.22	41.63	0.30	0.711
Meningococcal vaccine is required for the annual pilgrimage to Mecca (Hajj)?	72.95	42.94	0.32	0.711
1/Vaccine	72.37	44.33	0.21	0.717
2/Chemoprophylaxis such as Atovaquone/proguanil, Chloroquine	72.98	43.36	0.32	0.711
1/food and drinks hygiene	73.21	44.82	0.31	0.715
2/Antibiotic prophylaxis	72.43	44.73	0.16	0.720
Vaccine	73.20	45.15	0.21	0.718
Hand wash	73.22	44.99	0.33	0.716
Wear mask	73.23	45.09	0.29	0.717
Social distance	73.21	45.00	0.28	0.716
Pregnancy	72.50	43.82	0.32	0.712
Severe allergic reaction	72.46	44.61	0.22	0.717
Younger than 16	72.55	43.21	0.34	0.710
Malaria prophylaxis	71.45	46.78	-0.11	0.731
Travel vaccines	71.31	46.27	-0.01	0.724
First aid k2wledge and kit	71.43	45.51	0.12	0.721
Insect bite	71.36	46.20	0.00	0.724
safe sex	71.53	44.16	0.24	0.716
Motion sickness	71.53	44.75	0.20	0.718
Geographical diseases	71.58	44.81	0.14	0.721
Clothing	71.73	45.36	0.05	0.727
In flight exercise	71.70	43.51	0.25	0.715
Travel insurance	71.70	45.22	0.07	0.726
Jet lag	71.63	46.44	-0.06	0.732
Medical conditions (reports , medical bracelet or card)	71.39	46.29	-0.03	0.726
Medication (refill, storage)	71.35	46.03	0.04	0.723
Food and drinks hygiene	71.32	46.05	0.06	0.723

Table 1: Demographic and travel medicine practice characteristics of primary health care physicians (n=240)

		Number	%
Gender	Male	127	52.92
	Female	113	47.08
Nationality	Saudi	179	74.58
	Non Saudi	61	25.42
Age	<30	99	41.25
	30-39	85	35.42
	40-49	42	17.50
	>=50	14	5.83

Clinical experience	2 years	58	24.17
	2 - < 5 years	92	38.33
	5 - 10 years	38	15.83
	≥ 10 years	52	21.67
Position	General practitioner	29	12.08
	Resident	142	59.17
	Specialist	48	20.00
	Consultant	21	8.75
Number of patients seen per clinic	<10 patients	62	25.83
	10 to 20 patients	119	49.58
	21 to 30 patients	32	13.33
	>30 patients	27	11.25
Are you updating about travel medicine	Yes	124	51.67
	No	116	48.33
Source of information about travel medicine	MOH guidelines	0	0.00
	Expert/senior staff	110	45.83
	Websites (CDC, Up To Date, etc.)	198	82.50
	Books	37	15.42
	Journals	52	21.67
	Lectures	71	29.58
	Conferences	29	12.08

Table 2: Assessment knowledge of primary health care physicians toward travel medicine

Questions	Correct answers	
	Number (n=240)	%
Should the Health care providers advise patients to visit their physicians or a travel clinic minimum 4 to 6 weeks before departure to obtain necessary immunizations before travel?	217	90.4
Typhoid is transmitted by fecal contamination of food and water ?	192	80.0
For a rabies vaccinated person exposed to rabies, rabies immune globulin (RIG) is not needed, and only 2 further vaccines at days 0 and 3 ?	82	34.2
Yellow fever and meningococcal vaccines are required for travel into some countries?	211	87.9
Yellow fever is endemic to Sub-Saharan Africa and South America?	171	71.3
Travelers to yellow fever endemic regions should be re-vaccinated every 10 years ?	145	60.4
Contraindications for routine yellow fever vaccines are :		
1/immunocompromised	145	60.4
2/egg anaphylaxis	61	25.4
3/age <9 months old	100	41.7
4/pregnancy	127	52.9
The "Meningitis belt is in Sub-Saharan Africa?	104	43.3
Meningococcal vaccine is required for the annual pilgrimage to Mecca (Hajj)?	194	80.8
Advice patient who's travel to malaria endemic region to ?		
1/Vaccine	156	65.0
2/Chemoprophylaxis such as Atovaquone/proguanil, Chloroquine	190	79.2
For traveler diarrhea advice patient to?		
1/food and drinks hygiene	232	96.7
2/Antibiotic prophylaxis	152	63.3
Advice patient who's travel in COVID-19 crisis?		
Vaccine	230	95.8
Hand wash	233	97.1
Wear mask	235	97.9
Social distance	233	97.1
Contraindications of COVID-19 vaccine		
Pregnancy	164	68.3
Severe allergic reaction	175	72.9
Younger than 16	133	55.4

Table 3: Mean of the total score of knowledge of primary health care physicians toward travel medicine by demographic and travel medicine practice characteristics

		Mean[#]	SD	P value
Gender	Male	16.03	3.66	0.511
	Female	16.34	3.49	
Nationality	Saudi	16.32	3.68	0.288
	Non Saudi	15.75	3.24	
Age	<30	15.88	3.72	0.620
	30-39	16.19	3.72	
	40-49	16.69	2.88	
	>=50	16.64	3.67	

Clinical experience	2 years	15.72	3.04	
	2 - < 5 years	16.14	4.23	0.643
	5 - 10 years	16.55	3.36	
	≥ 10 years	16.46	3.02	
Position	General practitioner	15.10	3.15	
	Resident	16.09	3.67	0.053
	Specialist	16.31	3.73	
	Consultant	17.90	2.55	
Number of patients seen per clinic	<10 patients	16.50	3.78	
	10 to 20 patients	16.24	3.72	0.654
	21 to 30 patients	15.75	2.94	
	>30 patients	15.63	3.22	
Are you updating about travel medicine	Yes	17.19	3.01	<0.001*
	No	15.09	3.83	
Source of information about travel medicine	Expert/senior staff	16.03	3.42	0.557
	Websites (CDC, Up To Date, etc.)	16.45	3.54	0.010*
	Books	15.92	3.13	0.637
	Journals	16.19	4.24	0.969
	Lectures	15.48	4.05	0.051
	Conferences	17.21	3.38	0.098
Overall score (out of 23)		16.18	3.58	

* Significant p value
\# Likert scale with 2 points was used (False = 0, correct=1) for 23 items
\# (out of 23)

Table 4: Assessment attitude of primary health care physicians toward travel medicine

	Disagree		Neutral		Agree	
	Number	%	Number	%	Number	%
Advices should be given during travel counseling						
Malaria prophylaxis	6	2.5	32	13.3	202	84.2
Travel vaccines	0	0	10	4.2	230	95.8
First aid k2wledge and kit	3	1.3	32	13.3	205	85.4
Insect bite	0	0	22	9.2	218	90.8
safe sex	16	6.7	31	12.9	193	80.4
Motion sickness	6	2.5	51	21.3	183	76.3
Geographical diseases	15	6.3	45	18.8	180	75.0
Clothing	26	10.8	59	24.6	155	64.6
In flight exercise	28	11.7	47	19.6	165	68.8
Travel insurance	23	9.6	58	24.2	159	66.3
Jet lag	18	7.5	50	20.8	172	71.7
Medical conditions (reports , medical bracelet or card)	6	2.5	17	7.1	217	90.4
Medication (refill, storage)	3	1.3	14	5.8	223	92.9
Food and drinks hygiene	1	.4	10	4.2	229	95.4

Table 5: Mean of the total score of attitude of primary health care physicians toward travel medicine by demographic and travel medicine practice characteristics

		Mean#	SD	P value
Gender	Male	38.81	3.91	0.800
	Female	38.68	4.02	
Nationality	Saudi	39.07	3.78	0.033*
	Non Saudi	37.82	4.32	
Age	<30	38.20	3.83	
	30-39	39.13	4.26	0.265
	40-49	38.88	3.87	
	>=50	39.93	2.70	
Clinical experience	2 years	38.07	3.77	
	2 - < 5 years	39.12	3.91	0.445
	5 - 10 years	38.63	4.35	
	≥ 10 years	38.94	3.94	
Position	General practitioner	36.07	4.45	
	Resident	39.03	3.81	<0.001*
	Specialist	38.77	3.89	
	Consultant	40.52	2.54	
Number of patients seen per clinic	<10 patients	38.89	3.60	
	10 to 20 patients	38.86	4.10	0.724
	21 to 30 patients	38.00	4.77	
	>30 patients	38.85	3.00	

Are you updating about travel medicine	Yes	39.17	3.64	0.089
	No	38.30	4.23	
Source of information about travel medicine	Expert/senior staff	38.79	3.86	0.883
	Websites (CDC, Up To Date, etc.)	38.85	3.89	0.379
	Books	38.24	4.26	0.398
	Journals	37.98	4.25	0.113
	Lectures	37.86	4.91	0.050
	Conferences	37.59	4.87	0.091
Overall score (out of 42)		38.75	3.95	

* Significant p value
# Likert scale with 3 points was used (Disagree=1, Neutral=2, Agree=3) for 14 items
# (out of 42)

Statistical analysis
Data were analyzed by using Statistical Package for Social Studies (SPSS 22; IBM Corp., New York, NY, USA). Continuous variables were expressed as mean ± standard deviation and categorical variables were expressed as percentages. T-test and one way ANOVA were used for continuous variables. Chi square test was used for categorical variables. The Cronbach's alpha was used to assess reliability and internal consistency of the items in the questionnaire. A p-value <0.05 was considered statistically significant.

Reliability of the questionnaire
The Cronbach's alpha value of the questionnaires was 0.722 which reflect acceptable reliability of the questionnaire.

Discussion
We conducted this study aiming to assess the knowledge and attitude of primary care physicians towards travel medicine. The results of the current study revealed an overall suboptimal knowledge level, and a high positive attitude towards travel medicine among the participated primary care physicians.
Travel health advice can be complicated, and trained health care professionals are required to ensure travelers' safety. The low knowledge level about travel medicine reported in the current study is in line with a recently published local similar study [19]. The lack of knowledge could be attributed to the absence of travel medicine as a distinct and necessary entity in medical curricula, as well as physicians' lack of exposure to medical conferences on the subject. In contrast, a previous study conducted in Oman showed that the majority of the participating primary care physicians were aware of the issues that needed to be addressed during the pre-travel consultation [20].
As for the source of their travel medicine knowledge, there was a wide range of sources, though, as many as 82 percent of participating physicians obtained their travel medicine knowledge from websites such as the CDC. The study participants' reliance on a diverse range of sources for travel medicine information demonstrates the need for a uniform standard guidance system in this area. Several studies revealed the availability of country-specific information access methods used by practitioners, such as the Internet in Qatar (78.9%) [12], online access to a medical library in the United Kingdom [21], and a national handbook in Germany [22]. The results of the current study in this regard are in contrast to a similar recently published local study in which as many as 66% of participant physicians had gathered their knowledge about travel medicine through Saudi Ministry of Health guidelines compared to 0% of the current participants who use the same source [19]. To improve

traveler management, easily accessible travel medicine education programs are required.
We attempted to investigate the relationships between adequate knowledge scores and participant characteristics. Updating knowledge and using websites to obtain information increased the likelihood of a higher knowledge score in the study significantly. Other factors were statistically insignificant, which could be attributed to the small sample size. However, the findings suggest that regular targeted educational programs would be extremely beneficial in establishing high-quality travel medicine services. A previous study in Oman showed that attending travel medicine CME and post-travel consultation experience increased the likelihood of a higher knowledge score; however, the results were statistically non-significant [20].
In contrast to the recently published study from Saudi Arabia [19], which revealed suboptimal attitudes towards travel medicine among primary care physicians, the current study showed a positive attitude. While in agreement with ours, the Omani study reported a positive attitude towards travel medicine among primary care physicians [20]. This optimistic attitude among PCPs will be beneficial to the development of primary healthcare services.
As with any study, the current study has its limitations and strengths. The limitations include that we did not assess the rate of practicing travel medicine (As a result of the limited travel during the COVID-19 crisis) among the study participants, and we did not address the barriers the physicians face in acquiring knowledge and practicing travel medicine. Including primary care physicians from a whole cluster is considered a strength for the study, though, the results cannot be generalized to the whole kingdom as it covered Riyadh city only.

Conclusion
The current study showed that the level of knowledge about travel medicine among primary care physicians in cluster 2 In Riyadh city, Saudi Arabia, is suboptimal. In contrast, the participants showed a positive attitude towards travel medicine. This highlights the need for regular training programs for the primary care physicians regarding travel medicine.

References
1. Piotte E, Bellanger AP, Piton G, *et al*. Pre-travel consultation: evaluation of primary care physician practice in the Franche-comté region. J Travel Med. 2013;20:221-7.
2. Alduraibi RK, Almigbal TH, Alrasheed AA, *et al*. Knowledge, attitudes, and practices of primary health care physicians regarding the pre-travel 4counselling of

patients with type 2 diabetes in Riyadh, Saudi Arabia. BMC Fam Pract. 2020;21:200.

3. Schlagenhauf PJ, Jones ME. Travel medicine in Oman – Chances and challenges. Travel Med Infect Dis. 2015 Sep-Oct;13(5):351-2.

4. Noble LM, Willcox A, Behrens RH. Travel clinic consultation and risk assessment. Infect Dis Clin North Am. 2012;26(3):575-93.

5. Leder K, Steffen R, Cramer JP, Greenaway C. Risk assessment in travel medicine: how to obtain, interpret, and use risk data for informing pre-travel advice. J Travel Med. 2015;22(1):13-20.

6. Kish MA. Guide to development of practice guidelines. Clin Infect Dis. 2001;32:851-854.

7. Freedman DO, Chen LH, Kozarsky PE. Medical considerations before international travel. N Engl J Med. 2016;375(3):247-60.

8. Price VA, Smith RA, Douthwaite S, *et al*. General physicians do not take adequate travel histories. J Travel Med. 2011;18:271-4. DOI: 10.1111/j.1708–8305.2011.00521. x. Epub 2011 Jun 15.

9. Hill DR. Health problems in a large cohort of Americans traveling to developing countries. J Travel Med. 2000;7(5):259-66.

10. Reid D, Keystone J, Cossar J. Health risks abroad, general considerations. In: DuPont H, Steffen R, editors. Textbook of travel medicine and health. 2nd ed. Hamilton: BC Decker. 2001, 3-10.

11. Caumes E, Legros F, Duhot D, *et al*. Health problems in returning travelers consulting general practitioners. J Travel Med. 2008;15:457-459.

12. Al-Hajri M, Bener A, Balbaid O, Eljack E. Knowledge and practice of travel medicine among primary health care physicians in Qatar. Southeast Asian J Trop Med Public Health. 2011;42:1546-52.

13. Leggat P. Sources of health advice given to travelers. J Travel Med. 2000;7(2):85-8.

14. Ropers G, Krause G, Tiemann F, Beest Holle M, Stark K. Nationwide survey of the role of travel medicine in primary care in Germany. J Travel Med. 2004;11(5):287-94.

15. Thava Seelan S, Leggat PA. Health advice given by general practitioners for travellers from Australia. Travel Med Infect Dis. 2003;1(1):47-52.

16. Van Herck K, Castelli F, Zuckerman J, Nothdurft H, Van Damme P, Dahlgren A-L, *et al*. Knowledge, attitudes and practices in travel-related infectious diseases: the European airport survey. J Travel Med. 2004 Jan-Feb;11(1):3-8.

17. Cossar JH, Reid D. Immunisation and health advice for travellers: the role of the general practitioner. Health Bull (Edinb). 1992;50:428-32.

18. Kogelman L, Barnett ED, Chen LH, Quinn E, Yanni E, Wilson ME, *et al*. Knowledge, attitudes, and practices of US practitioners who provide pre-travel advice. J Travel Med. 2014;21(2):104-14.

19. Sharahili AA, Al-Eanzi F, Ghzwany AA, Alazmi AM, Alhwsawi EA. Knowledge, attitude, and practice of travel medicine among primary health care physicians in the Cluster-1, Riyadh City, Saudi Arabia: A cross-sectional study. J Family Med Prim Care. 2021 Jul;10(7):2587-93.

20. Kurup PJ, Al Abri SS, Al Ajmi F, Khamis HA, Singh J. Knowledge, attitude and practice of travel medicine among primary care physicians in Oman: the need for intervention. East Mediterr Health J. 2019 Mar 19;25(1):40-6.

21. Ropers G, Krause G, Tiemann F, Beest Holle M, Stark K. Nationwide survey of the role of travel medicine in primary care in Germany. J Travel Med. 2004;11(5):287-94.

22. Caroll B, Behrens RH, Crichton D. Primary health care needs for travel medicine training in Britain. J Travel Med. 1998;5(1):3-6.