Travel health attitudes among Turkish business travellers to African countries

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Summary *Background:* The number of international travellers is increasing worldwide. Although health risks related to international travel are important and generally well-understood, the perception of these risks was unclear among Turkish travellers. We aimed to evaluate the attitudes and health risk awareness of Turkish travellers travelling to African countries.
Method: A survey was performed of Turkish travellers bound for Africa from Istanbul International Ataturk Airport in July 2013.
Results: A total of 124 travellers were enrolled in the study. Among them, 62.9% had information about their destination but only 11.3% had looked for information on health problems related to travel and their destination. Of all travellers, 53.2% had at least one vaccination before travelling. The most commonly administered vaccine was for typhoid. Among the travellers, 69.3% and 80.6% had "no idea" about yellow fever vaccination and malaria prophylaxis, respectively. A positive correlation was found between a higher level of travellers' education and receiving the recommended vaccination for the destination.
Conclusions: Our study revealed significant gaps in the vaccination and chemoprophylaxis uptake of Turkish travellers departing to Africa. An awareness and training program should be developed for travellers, as well as public health workers, to address health risks related to travel.
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1. Introduction

Globalization, increased industrialization, population growth, and improvements in the economy have strengthened the relationship between countries, and travelling both for business and leisure has become common. Since time is important, aeroplanes are the first choice of transportation [1]. The number of international tourists has increased by 5%, reaching 1.087 billion in 2013, and it will continue to increase [2]. Millions of people from industrialized countries travel abroad and visit tropical and subtropical countries every year [3]. With globalization, travellers can carry dangerous and infectious diseases into their own countries. Malaria, dengue, enteric fever, spotted-fever group rickettsioses, chikungunya, and nonspecific viral syndromes were the most frequent infections among travellers [4]. Imported mosquito-borne infections such as malaria, dengue fever, and chikungunya infection have increased among European travellers [5]. In 2015, reportedly 214 million people acquired malaria and 438,000 died as a result, according to the World Health Organization (WHO) [6]. Although these numbers are decreasing, the number of cases of malaria in travellers has been increasing steadily for the past 4 years. Every year, more than 125 million international travellers visit 97 countries where there is a risk of malaria transmission. Over 10,000 of these travellers are reported to become ill with malaria after returning home; however, underreporting means that the actual figure may be considerably higher [7]. Influenza and other respiratory viruses can also be transmitted and cause outbreaks resulting from international travel [8]. In 2009, 642 cases of pandemic influenza (H1N1) were detected in North America and, within a few weeks, new cases were detected all over the world. Therefore, WHO increased the pandemic alert level to phase 4 [9]. The most recent Ebola virus outbreak started in 2014 in West Africa (Guinea, Liberia, and Sierra Leone) and spread through many African countries (Nigeria, Mali, and Senegal) and beyond (United States, Italy, United Kingdom, and Spain) [10]. The virus was detected in travellers who were returning from these countries and in health care workers who were providing care to these travellers [11]. The Ebola epidemic in West Africa destroyed lives and devastated communities with extremely high numbers of cases and deaths reported at 28,603 and 11,301, respectively, as at the end of February 2016 [10].

When considering all of the above information, the concepts of travel health and travel medicine have been developed. Travel medicine has emerged as a distinct entity over the last two decades in response to a very substantial increase in international travel. Travel medicine is a challenging speciality that requires up-to-date knowledge of the global epidemiology of infectious and non-infectious health risks, the changing distribution of drug-resistant infections, and both international and local health regulations and immunization requirements [12]. The professional advice given before travel is prepared based on the current etiologic data from experts in the field [13,14]. Travel medicine services are important for the prevention of travel-related diseases by providing pre-travel advice, prophylactics and vaccines to prevent infections, and other preventive measures such as food and water safety precautions, and information on preventing insect bites [15]. Travellers are now vaccinated according to their destination and are informed about regional endemic diseases. However, it was found that in most cases travellers were unaware of the risks and they reported that they did not take the necessary precautions [16—18]. Key aspects of travel medicine are risk assessment and risk management, not only of infectious diseases but also of conditions resulting from the natural environment, local circumstances, and underlying illnesses in the traveller that might be affected by travel [19].

In 2013, the number of people travelling abroad from Turkey was 36,731,037 and 17,148,018 (46.7%) of them travelled from Istanbul Ataturk International Airport [20]. According to the Development Bank of Turkey Annual Report, 8,937,660 Turkish people travelled abroad in 2007 [21].

We aimed to evaluate the knowledge, attitude, and behaviour of Turkish travellers regarding travel health using a survey.

2. Methods

A questionnaire-based survey was conducted from the 3rd to the 9th July 2013 in Istanbul International Ataturk Airport. The inclusion criteria were being a Turkish resident, aged 18 years or greater, and travelling to Africa. A total of 250 adult travellers who were travelling to the countries given in Table 1 were studied. One hundred and twenty-four of 250 travellers (response rate 49.6%) volunteered to take part in the survey. The volunteers were informed about the research, the purpose of the study, and that their responses would be kept confidential. Approval was given by the Istanbul International Ataturk Airport Authority on behalf of the airlines flying to the above destinations.

Data were collected using a standardized anonymous questionnaire that was specifically designed and written in the Turkish language. This questionnaire was administered by 2 trained interviewers and required approximately 15 min of the volunteers' time. There were 31 questions included in the survey. Questions were asked regarding socio-demographic features (age, sex, educational status, occupation, presence of chronic disease, and monthly income), travel health knowledge, and the attitude and behaviours of the travellers. Based on the inclusion criteria, approximately 20 randomly selected travellers were interviewed during each visit, and interviews took place in the waiting area at the airport gates for the selected flights. The vaccination and malaria chemoprophylaxis regimens recommended for each country were defined according to the guidelines of WHO [22].

All statistical analysis was performed using SPSS 15.0 for Windows (SPSS, Chicago, USA). Data were expressed as a number (%) and mean ± standard deviation for nominal and continuous variables, respectively. Spearman's rank correlation coefficient was used to analyse the bivariate correlation between various demographics (age, occupation, income, travel duration) and various travel health attitudes (research about destination and travel health, obtaining

travel advice, travel health kit preparation, vaccination for travel). A p value <0.05 was considered significant.

3. Results

A total of 124 Turkish travellers with an average age of 39.3 ± 6.8 (range: 29–60) years were enrolled in the present study. Their demographic features and travel details are given in Table 1.

While 62.9% of the travellers had collected the information about their destination, only 14 (11.3%) undertook research about travel health. Eleven (78.6%) of those who undertook research reported that they obtained information from a travel health centre of the Turkish Ministry of Health. Among the travellers, 41.2% reported that they did not need to do any research before travel. Most of the travellers (91.1%) stated that they were obliged to see a medical doctor and they obtained information from travel health centre specialists. The characteristics of these 113 travellers (91.1%) are as follows: an average age of 40.1 ± 6.5 years, 62% graduated from university, 75.3% had a monthly income, 73.5% had visited Africa before, and 53.1% received the recommended vaccination before travelling. The attitudes of the travellers before the travel are shown in Table 2.

The volunteers' level of knowledge of infections in the destination country and the associated vaccination or chemoprophylaxis strategies is given in Table 3. The recommended vaccination status for travel and the vaccine type of Turkish travellers are presented in Table 4. Fourteen of the travellers who researched travel health had been vaccinated depending on their destination. Fifty-two of 110 (47.3%) travellers who did not undertake research had been vaccinated based on advice from their family physician or travel physician. Thirty-one of 88 (35.2%) travellers who were travelling to countries with a risk of yellow fever were vaccinated against the disease. The reasons for being vaccinated are given in Table 5. The status of the travellers who were vaccinated with any type

Table 1 Demographic features of Turkish travellers.

Features	n (%)
Sex	
Male	124 (100)
Age group (years)	
29-39	61 (49.2)
40-49	54 (43.5)
≥ 50	9 (7.3)
Educational status	
Primary	16 (12.9)
Secondary school	7 (5.7)
High school	20 (16.1)
University	81 (65.3)
Destination	
Cameroon	30 (24.2)
Libya	30 (24.2)
Uganda	15 (12.1)
Ivory Coast	14 (11.3)
Rwanda	12 (9.7)
Kenya	11 (8.9)
Nigeria	6 (4.8)
Tunisia	6 (4.8)
Occupation	
Worker	60 (48.4)
Businessman	58 (46.8)
Government employee	6 (4.8)
Chronic Disease state	
Yes	1 (0.8)
No	123 (99.2)
Monthly income (Turkish Lira-TL)*	
< 1000	6 (4.8)
1000–2999	22 (17.8)
3000–4999	43 (34.7)
≥ 5000	53 (42.7)
Purpose of the travel	
Holiday	1 (0.8)
Business	123 (99.2)
Accompanying person	
Individual	80 (64.5)
A group	32 (25.8)
Friend/Colleague	12 (9.7)
Is this the first time to the destination?	
Yes	35 (28.2)
No	89 (71.8)
Duration of the stay (days)	
< 7	35 (28.2)
7–14	40 (32.3)
15–30	11 (8.9)
≥31	38 (30.6)

*1 TL ~ 0.4 USD.

Table 2 Travel health behaviours of Turkish travellers.

Question/response	n (%)
Did you conduct a general search about the destination before the travel? (n = 124)	
Yes	78 (62.9)
No	46 (37.1)
Did you voluntarily perform research about travel diseases/health? (n = 124)	
Yes	14 (11.3)
No	110 (88.7)
Reason for not doing research (n = 110)	
Not necessary	51 (41.1)
Busy	39 (34.5)
I do not think I am at risk	20 (16.1)
Obligatory MD consultation before travel (n = 124)	
Yes	113 (91.1)
No	11 (8.9)
MD specification (n = 113)[a]	
Family physician	49 (43.4)
Travel physician	76 (67.3)
Infectious diseases specialist	1 (0.9)
Number of travel health kit preparation (n = 124)	
Yes	20 (16.1)
No	104 (83.9)

[a] Since more than one choice can be picked the sum is higher than 100%.

Table 3 Knowledge level of the volunteers about infections in the destination that can be prevented by vaccination or chemoprophylaxis (volunteers were allowed to pick more than one choice).

Infection	No risk	Risky	No idea
	n (%)	n (%)	n (%)
Hepatitis A	12 (9.7)	21 (16.9)	91 (73.4)
Hepatitis B	12 (9.7)	5 (4.0)	107 (86.3)
Yellow fever	12 (9.7)	26 (21.0)	86 (69.4)
Typhoid	7 (5.6)	49 (39.5)	68 (54.8)
Polio	12 (9.7)	5 (4.0)	107 (86.3)
Rabies	12 (9.7)	11 (8.9)	101 (81.5)
Meningococcal meningitis	12 (9.7)	11 (8.9)	101 (81.5)
Malaria	12 (9.7)	12 (9.7)	100 (80.6)
Influenza	12 (9.7)	7 (5.6)	105 (84.7)

Table 4 Travel vaccination status and the vaccine type of Turkish travellers.

Question/response	n (%)
Did you get vaccinated before travelling (n = 124)	
Yes	66 (53.2)
No	58 (46.8)
Type of vaccine (n = 66)[a]	
Typhoid	55 (83.3)
Yellow fever	31 (47.0)
Hepatitis A	11 (16.7)
Meningitis	10 (15.2)
Influenza	1 (1.5)

[a] Since more than one choice can be picked the sum is higher than 100%.

Table 6 Frequency of travellers who were vaccinated in general depending on the duration of the stay.

Duration of stay	Vaccinated	Not Vaccinated	Total
	n (%)	n (%)	n (%)
< 7 days	12 (34.3)	23 (65.7)	35 (28.2)
7–14 days	18 (45.0)	22 (55.0)	40 (32.3)
15–30 days	5 (45.5)	6 (54.5)	11 (8.9)
> 30 days	31 (81.6)	7 (18.4)	38 (30.6)
Total	66 (53.2)	58 (46.8)	124 (100)

positive correlation between education and income level, and research on destination, seeking travel advice, and obtaining the suggested vaccination for destination. However, a negative correlation was found between the education and income level, and research on travel health (Table 8).

4. Discussion

Globalization, increased industrialization, population growth, and improvements in the economy have strengthened the relationship between countries, and it has become common to travel both for business and leisure. Travellers can carry infectious diseases that they acquire during travel. Since travel medicine is primarily focused on prevention, the traveller's health and safety will depend on the practitioner's level of expertise and proficiency in providing pre-travel counselling, as well as the required or recommended vaccinations [12].

In 2004, Toovey et al. reported that the 79% of the participants who travelled from Johannesburg International Airport in South Africa to other countries in Africa received general advice about the destination and 86% of the travellers obtained travel health advice before travelling [23]. In 2004, Hamer et al. reported that 36% of people travelling from John F. Kennedy International Airport in New York to countries with a risk of malaria, including Latin America, Asia, the Caribbean, and Africa sought advice prior to travel, and only 10% discussed their trip with a travel health specialist [24]. It was reported that 30% of the travellers received advice from travel specialists, and 68% of the travellers received this advice from primary physicians in a study by Kogelman et al. [1]. In our study, most of the travellers had collected information about their destination, but a greater number of participants did not conduct

of vaccine depending on the duration of the stay is presented in Table 6.

The knowledge level of travellers who were travelling to a region with a risk of yellow fever and malaria, hence the prophylaxis recommended by WHO [22] were given in Table 7.

The bivariate correlation analyses between various demographics (age, education, income, travel duration) and various travel health attitudes (research on destination and travel health, seeking travel advice, travel health kit preparation, obtaining the recommended vaccination for the destination) are presented in Table 8. There was a

Table 5 Reasons for not being vaccinated according to Turkish travellers.

(N = 58)	I do not think I am at risk	Not an important disease	Not staying too long	Been vaccinated before
	n (%)	n (%)	n (%)	n (%)
Hepatitis A	35 (60.3)	1 (1.7)	22 (37.9)	0 (0)
Hepatitis B	35 (60.3)	1 (1.7)	22 (37.9)	0 (0)
Yellow fever	17 (29.3)	6 (10.3)	22 (37.9)	13 (22.4)
Polio	35 (60.3)	1 (1.7)	22 (37.9)	0 (0)
Rabies	35 (60.3)	1 (1.7)	22 (37.9)	0 (0)
Influenza	17 (29.3)	1 (1.7)	22 (37.9)	18 (31.0)

Table 7 Travellers' knowledge levels about yellow fever and malaria according to destination.

Country	Yellow fever			Malaria		
	No risk	Risky	No idea	No risk	Risky	No idea
	N (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Ivory Coast[a]	1 (7.1)	5 (35.7)	8 (57.1)	1 (7.1)	1 (7.1)	12 (85.7)
Cameroon[a]	5 (16.7)	15 (50)	10 (33.3)	5 (16.7)	5 (16.7)	20 (66.6)
Kenya[a]	0 (0)	0 (0)	11 (100)	0 (0)	6 (54.5)	5 (45.5)
Nigeria[a]	0 (0)	0 (0)	6 (100)	0 (0)	0 (0)	6 (100)
Rwanda[a]	0 (0)	0 (0)	12 (100)	0 (0)	0 (0)	12 (100)
Uganda[a]	0 (0)	0 (0)	15 (100)	0 (0)	0 (0)	15 (100)
Libya	6 (20)	6 (20)	18 (60)	6 (20)	0 (0)	24 (80)
Tunisia	0 (0)	0 (0)	6 (100)	0 (0)	0 (0)	6 (100)
Total	12 (9.7)	26 (21)	86 (69.3)	12 (9.7)	12 (9.7)	100 (80.6)

[a] WHO suggests yellow fever vaccination and malaria chemoprophylaxis [22].

Table 8 Spearman's correlation coefficients between various demographics and various travel health attitudes.

	Research on destination		Research on travel health		Seeking travel advice		Travel health kit preparation		Obtaining the recommended vaccination for destination	
	rho[a]	p[b]	rho[a]	p[b]	rho[a]	p[b]	rho[a]	p[b]	rho[a]	p[b]
Age	−0.163	0,07	−0.006	0.94	−0.4	<0.001	−0.191	0.03	0.006	0.95
Education level	0.555	<0.001	−0.184	0.04	0.366	<0.001	−0.054	0.55	0.45	<0.001
Income level	0.551	<0.001	−0.281	0.002	0.331	<0.001	−0.062	0.49	0.299	0.001
Duration of travel	−0.221	0.01	0.154	0.088	0.002	0.98	0.192	0.03	−0.358	<0.001

[a] Spearman's correlation coefficient (r_s).
[b] Significance level.

any research about travel health. Those who undertook research did so in the last week before travel and obtained their advice from travel health centres. This observation indicates the need to raise public awareness about travel health in Turkey. Most of the participants who received obligatory advice reported that they obtained it from travel health centre physicians, and less than half of the participants received counselling from family physicians. Since there is no travel health subject in the education of family physicians in Turkey, travellers tend to attend travel health centres. There is a national guideline for travel health for Turkish people. Additionally, there is an official website (www.seyahatsagligi.gov.tr) of the Turkish Ministry of Health for travel health services. On this website, there are guidelines and leaflets for travel health, call centre information, and contact information of 30 travel health centres in different cities in Turkey.

Participants who did not receive advice in a study by Toovey et al. [23] answered "I knew what should be done". On the contrary, in our study, participants replied that they did not need to. One reason for this could be a lack of public awareness about travel health in Turkey.

In the study by Toovey et al. [23], 9% of the participants who were travelling to the regions with a risk of yellow fever had not been vaccinated and 22% of the participants who were travelling to regions with a low risk of yellow fever had been vaccinated. This may be the result of a lack

of information from the specialists who administered the vaccination. A small number of the participants who were travelling to the regions that WHO declared at risk of yellow fever, and for which prophylaxis application was recommended, knew that there was a risk of yellow fever and malaria. Although they were at risk, only one-third of the participants in our study had been vaccinated against yellow fever. Half of the participants who received advice voluntarily or obligatorily had been vaccinated. This also indicated the lack of awareness about travel infections in Turkish travellers.

Kogelman et al. [1] noted that most health professionals lack necessary information. Likewise, Hatz et al. [25] reported the inadequacy of travel health advice from Swiss and German practitioners and it was reported by Kodkani et al. [26] that Swiss pharmacists also provide inadequate counselling about malaria and vaccination. On the other hand, less than half of our participants obtained information from family physicians. Travel health providers should increase their training and education efforts to improve awareness and to encourage safe and healthy travel [27]. Since there is no travel health subject in the education curriculum of family physicians in Turkey, travellers cannot get adequate information about travel health. Likewise, Flaherty et al. [28] noted that several recommended travel risk reduction strategies were not routinely observed by Irish university students.

In an airport-based study conducted by Laroque et al. [17], it emerged that 46% of people travelling from the US to countries with a low income had not undertaken travel health research. According to the participants, the internet is the most popular source of information, primary care providers were in second place, and travel health specialists were in third place. On the contrary, the most popular answer in our study was travel health specialists.

Since there is no close contact with mammals nowadays, Zimmerman et al. [14] reported that rabies should not be considered a risk factor, but the reason for this could be that advisors do not address rabies as a risk factor. The necessity of giving information about rabies is emphasized by several studies [29]. When we questioned participants the rabies risk in our study, most said that they had no idea about it.

There was a positive correlation between education and income level and research on destination, seeking travel advice, and receiving the suggested vaccination for destination in our study. We think that this finding can be explained by the conscious behaviours of individuals with a high level of education and income when obtaining advice on travel health through specialized travel agencies. Policy makers should consider that improving travel awareness for other social groups is vital for Turkish citizens, who are becoming increasingly integrated with the rest of the world.

The limitation of the study is the low sample size when compared with the similar studies in the literature. The exact number and nationalities of the travellers were not determined because of the privacy rules of the airline companies. For this reason the ratio of Turkish citizens on Africa-bound flights could not be reported to estimate the sample size. Besides all these limitations, this is the first study that investigates the travel health attitudes of Turkish citizens who travel from Turkey to Africa.

5. Conclusions

A widespread study should be performed to improve the knowledge, attitudes, and practices of Turkish travellers who travel to destinations with a risk of infectious diseases that can be prevented during the trip.

To address this issue, travel health lectures and courses should be included in the medical education curriculum, the number of travel health centres should be increased, and travel health awareness should be engendered among family physicians and the general public, especially in developing countries such as Turkey.

Conflict of interest

None declared.

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