

# Pretravelling Health-Seeking Behavior, Knowledge of Vaccines, and Attitudes Toward Travel Health among Malaysian Travelers

## Abstract

**Background:** Travelers are at higher risk of developing health-related problems, especially travel-related diseases, and this remains a major public health burden. **Aims:** To assess pretravel health behavior-seeking factors, knowledge of vaccine, and travel health attitudes. A cross-sectional design among Malaysian travelers. **Methods:** An online survey was conducted from December 2017 till March 2018 among 226 participants. Demographic data, pretraveling health behaviors, knowledge of vaccine-preventable diseases, and travel health were asked. Independent *t*-test and ANOVA were performed using SPSS version 20. **Results:** Among travelers, 51.3% and 63.7% used health-related information on their destination before departure and collected information on possible travel hazards at their destination. Participant age ( $P = 0.02$ ), monthly income ( $P = 0.01$ ), predeparture health information ( $P = 0.03$ ), information on possible hazards ( $P = 0.04$ ), and travel health advice from medical professionals ( $P = 0.03$ ) have been reported as a major predictor of knowledge of vaccine-preventable disease. Travelers' gender ( $P = 0.01$ ), household income ( $P = 0.01$ ), and travel health advice from professionals ( $P = 0.002$ ) were significantly associated with travel health attitude. **Conclusions:** Sociodemographic and pretravel health-seeking behavior influence knowledge of vaccine-preventable disease and attitudes towards travel health which requires a public health need for community outreach programs targeting this group.

**Keywords:** Attitude to health, communicable diseases, information-seeking behavior, travel-related illness, vaccine-preventable diseases

## Introduction

The risk of adverse health conditions caused by different forms of infectious diseases may depend upon the countries of destination. Travelers to/from and within Europe with travel-related diseases from 2008 to 2012 were mainly affected by malaria, with most cases (86%) of malaria acquired while traveling to sub-Saharan Africa.<sup>[1]</sup> It was also reported that the highest infection rate among 6086 travelers who had gastrointestinal infections traveled to tropical regions such as sub-Saharan Africa, South America, and South Asia.<sup>[2]</sup>

Preventing these travel-related infections has also been neglected by most travelers. For instance, the uptake of the rabies vaccine was very low despite being recommended by health practitioners in a pretravel clinic. Of the 13,235 travelers attending the clinic, only 2% registered previous rabies vaccination and only

3% received vaccination at the end of the consultation.<sup>[3]</sup> Moreover, just over half (59%) of 27,386 travelers from seven western countries had some form of hepatitis vaccination, either monovalent hepatitis A or combined hepatitis A and B vaccines.<sup>[4]</sup> Overall, the pretravel immunizations were very small for meager 1–5% (1% for rabies and cholera; 2% for influenza, meningococcal meningitis, polio, and yellow fever; 3% for typhoid; and 5% for hepatitis A and B).<sup>[5]</sup>

Many of these studies were conducted in developed countries and there is still a shortage of data on health-seeking behavior among Malaysian travelers. Recent years have seen a growing number of Malaysians traveling overseas, partly due to increased median household income<sup>[6]</sup> as well as more fair and affordable air tickets offered by low-cost airlines. Given the importance of pretravel health consultation and vaccination in the prevention of

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travel-related illnesses, this study is focused on the analysis of health-seeking practices among Malaysian travelers.

## Methods

A cross-sectional online survey of Malaysian travelers was conducted between December 2017 and March 2018. Participants were recruited through various online platforms such as social media, peer referral methods, and direct email. To be eligible for this study, participants had to be Malaysian travelers aged 18 years or older, able to understand and give consent in English. The sample size was calculated using EpidStat to estimate the number of Malaysian travelers, where at least 220 participants are sufficient.

The administration of the questionnaire was scheduled to take less than 10 min to complete and prepared in English. The questionnaire consists of three main sections including basic demographic information (7 questions), trip characteristics (6 questions), and pretravel health behavior and vaccination by travelers (8 questions). Participants were also tested on their knowledge of vaccines for preventable diseases (9 questions) and attitudes towards travelers' health (10 questions).

Data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) version 20. Categorical data were presented as numbers and percentages. Independent *t*-test and analysis of variance (ANOVA) were performed to compare the mean of two groups and more than two groups, respectively. A *P* value 0.05 was considered to be statistically significant. For the knowledge of vaccines, preventable disease, and attitudes toward traveler health, the participants had to respond "true" or "false." The correct answer gave a score of 1 while the incorrect answer gave a score of 0. The correct answers were calculated and summed up to give the total score. The minimum score for knowledge and attitude is "0" while the maximum score for knowledge and attitude is "10."

All participants were informed of the aims and purpose of this study. Participants who completed the consent page were eligible to participate in this study. For anonymity, no individual was disclosed, and all personal details remained fully confidential. The study protocol and additional documents were reviewed and approved (JKEtika 4/16 (3)). No incentive has been provided to the participants.

## Results

Overall, 226 participants were included in the study. The demographic data for the participants are shown in Table 1. Many participants in the 26–35 age group are 49.6%. Female participants (57.5%) were slightly higher than male participants (42.4%). More than 70% of the participants come from Malay ethnicity. Half of the participants are single. Most of the participants have upper middle income per month (38.9%).

**Table 1: The characteristics of participants**

Variable	Total (n=226) n (%)
Age	
18-25	39 (17.3%)
26-35	112 (49.6%)
36-45	50 (22.1%)
46-59	17 (7.5%)
>60	8 (3.5%)
Gender	
Male	96 (42.5%)
Female	130 (57.5%)
Ethnicity	
Malay	161 (71.2%)
Chinese	29 (12.8%)
Indian	24 (10.6%)
Others	12 (5.3%)
Marital status	
Single	129 (57.1%)
Married	88 (38.9%)
Divorced	9 (4%)
Educational level	
Primary education	3 (1.3%)
Secondary education	20 (8.8%)
Tertiary education	203 (89.8%)
Income per month	
Low income (< RM 1000)	23 (10.2%)
Lower middle income (RM 1000-RM 2999)	63 (27.9%)
Upper middle income (RM 3000-RM 5999)	88 (38.9%)
High income (>RM6000)	52 (23%)

The characteristics of the trip are shown in Table 2. Most participants identified themselves as tourists (80.5%), with small numbers traveling for business (12.4%) or visiting friends (7.1%). Almost 80% traveled for less than 2 weeks. A total of 134 participants (59.3%) were traveling with groups, 26.5% traveling alone and 14.2% were traveling with groups and children. Travel destinations were almost evenly divided between South East Asia (32.2%) and Europe (31.9%) while America was the least frequent destination. More than half of the participants visited two–four countries per year.

Many participants seek health-related information about their destination before departure, provide travel health advice from nonmedical sources, and ask about possible travel hazards at their destination. Only 13.7% of the participants receive travel advice from doctors and 26.5% of participants receive the vaccine before traveling. For travel insurance, 53.1% of the participants paid for it.

The overall mean score for knowledge of vaccine-preventable diseases was  $6.14 \pm 1.9$  and ranged from 2 to 10. As regards

**Table 2: Trip characteristic**

Variable	Total (n=226) n (%)
Purpose of traveling	
Holiday	182 (80.5%)
Business	28 (12.4%)
Visiting friends	16 (7.1%)
Duration of travel	
<2 weeks	177 (78.3%)
2-3 weeks	37 (16.4%)
>3 weeks	12 (5.3%)
Travel group	
With group	134 (59.3%)
With group and children	32 (14.2%)
Alone	60 (26.5%)
Destination	
Southeast Asia	73 (32.2%)
Europe	72 (31.9%)
South Asia	19 (8.4%)
Middle East	15 (6.6%)
East Asia	28 (12.4%)
Oceania	16 (7.1%)
America	3 (1.3%)
Visiting country per year	
1 country	58 (25.7%)
2-4 countries	123 (54.4%)
>5 countries	45 (19.9%)

to the individual items, more than half of the participants answered correctly in six out of ten questions, namely, hepatitis B (70.8%), influenza (69.9%), meningitis (59.7%), hepatitis A (57.1%), thyroid (52.7%), and yellow fever (52.2%).

Attitude towards travel health is shown in Table 3. The overall mean score for attitude was  $3.17 \pm 1.8$ . As regards the individual items, 52.2% of the participants responded correctly in question number four. The correct answer to the remaining questions was below 50% (range from 12.8% to 41.2%).

The age of participants ( $P = 0.02$ ), the monthly income ( $P = 0.01$ ), seeking information on health before departure ( $P = 0.03$ ), acquire information about potential hazard ( $P = 0.04$ ), and seek travel health advice from medical professionals ( $P = 0.03$ ) were found to be significantly associated with knowledge about vaccine [Table 4].

Gender ( $P = 0.01$ ), job ( $P = 0.03$ ), monthly income ( $P = 0.01$ ) of the participants, and seeking advice from medical personnel ( $P = 0.002$ ) were found to be significantly associated with attitude towards travel health [Table 4].

## Discussion

This study is believed to be the first to assess the general level of knowledge and attitude regarding travel safety

through a web-based survey in Malaysia. Most participants were female, married, 26–35-year-old age range, Malay ethnicity, completed tertiary education, and upper middle income per month, while tourism the main purpose of traveling. This is similar to other studies conducted in three international airports in London Heathrow, Paris Charles de Gaulle, and Munich,<sup>[7]</sup> Saudi Arabia<sup>[8]</sup> and the United Arab Emirates.<sup>[9]</sup>

Pretravel health-seeking behavior is important for the prevention of measures and healthy behaviors towards global population health and well-being.<sup>[10]</sup> This study found that only less than 20% of participants received medical advice from medical professionals before travel. This is considered low as compared to the study reported in Canada,<sup>[11]</sup> Australia,<sup>[12]</sup> Spain,<sup>[13]</sup> South Africa,<sup>[14]</sup> and the United States of America.<sup>[15]</sup> It is a disturbing trend and should be handled properly. This also means that medical professionals need to refresh their travel health management skills. Many tend to get advice from nonmedical sources, and this is more popular by Malaysians. This will leave them for internet disinformation, similar to a study conducted among US travelers.<sup>[15]</sup>

Once traveling to the destination case, travelers are more vulnerable to preventable health risks and accidents and may also pose a risk of introducing travel-related disease to the home country. Half of the participants are aware of this issue and have pretrip protection and bought travel insurance. Ironically, only 26.5% of participants took pretrip vaccines. This may be due to most of the participants' travel to countries in South East Asia and Europe, considered low-risk nations and the vaccine is not mandatory. However, the vaccine needed depends on the destination and planned activities<sup>[16]</sup> although it should not be taken lightly.

Most participants showed good knowledge about vaccine-preventable diseases indicated their acceptance. Younger age is associated with poor perception, while older participants had more knowledge of vaccinate diseases. This result is similar to the study conducted in Nigeria, where the mean score was highest among participants aged 34–41 and above relative to other younger groups.<sup>[17]</sup>

In this study, high-income participants proved to be the highest knowledge compared to low-income, similar to many reported studies.<sup>[18-20]</sup> They may have more access to information than the lower income. It shows that searching for correct information is an important factor. Healthcare professionals were ranked among the most sought-after for information. Expectedly, participants seeking health information from the medical professionals' team scored significantly higher on skills before departure and health advice. Therefore, the public needs to be educated about vaccine-preventable diseases

**Table 3: Attitudes towards travel health**

Number	Variable	Correct answer (n=226)
1	I think traveling does not increase the risk of getting illnesses if I am in good health	77 (34.1%)
2	I believe that infectious sexual diseases are only transmitted by the illegal sex	82 (36.3%)
3	In my opinion, visiting doctors before traveling is essential	93 (41.2%)
4	I think getting vaccinations are very important before traveling	118 (52.2%)
5	If I travel frequently, I do not need many preventive measures	40 (17.7%)
6	I think malaria chemo-prophylaxis is not effective	32 (14.2%)
7	In my opinion, maintaining personal hygiene will protect travelers from many diseases	64 (28.3%)
8	Usage of condom is not preferred even if it provides protection	52 (23.0%)
9	I do not think that infectious diseases could be related to traveling	40 (17.7%)
10	I think gastroenteritis only affects children and elderly people	29 (12.8%)

**Table 4: Knowledge about vaccine and attitude towards travel health and demographic factors, trip characteristics, and pre-traveler health-seeking behavior**

Variable		Knowledge about vaccine		Attitude towards travel health	
		Mean (SD)	P	Mean (SD)	P
Gender	Male	5.33 (2.1)	0.5 <sup>a</sup>	3.54 (1.9)	0.01 <sup>a</sup>
	Female	6.17 (2.0)		2.89 (1.6)	
Marital status	Single	6 (2)	0.07 <sup>a</sup>	3.06 (1.8)	0.17 <sup>a</sup>
	Married	6.45 (1.71)		3.4 (1.8)	
Visiting country	One country	6.49 (1.72)	0.19 <sup>a</sup>	3.12 (1.5)	0.76 <sup>a</sup>
	More than one country	5.90 (2.00)		3.19 (1.9)	
Seek information on health before departure	Yes	6.41 (1.87)	0.03 <sup>a</sup>	3.34 (1.57)	0.12 <sup>a</sup>
	No	5.85 (1.89)		2.97 (2)	
Travel insurance	Yes	6.28 (1.91)	0.23 <sup>a</sup>	3.33 (1.9)	0.14 <sup>a</sup>
	No	5.98 (1.87)		2.98 (1.6)	
Acquire information about potential travel hazard in destination	Yes	6.33 (1.89)	0.04 <sup>a</sup>	3.17 (1.7)	0.97 <sup>a</sup>
	No	5.80 (1.86)		3.16 (1.9)	
Seek travel health advice from medical professionals	Yes	6.47 (1.82)	0.03 <sup>a</sup>	3.61 (2)	0.002 <sup>a</sup>
	No	5.92 (1.91)		2.86 (1.5)	
Age	18-25	5.26 (1.9)	0.02 <sup>b</sup>	2.56 (1.7)	0.16 <sup>b</sup>
	26-35	6.44 (2.0)		3.2 (1.8)	
	36-45	6.14 (1.5)		3.34 (1.8)	
	46-59	6.3 (1.4)		3.65 (1.4)	
	>60	5.88 (1.7)		3.5 (2)	
Education level	Primary education	4 (1.7)	0.09 <sup>b</sup>	3.1 (1.7)	0.17 <sup>b</sup>
	Secondary education	5.8 (1.5)		3.67 (1.5)	
	Tertiary education	6.21 (1.9)		3.85 (2.2)	
Race	Malay	6.09 (1.9)	0.83 <sup>b</sup>	3.18 (1.7)	0.93 <sup>b</sup>
	Chinese	6.07 (1.8)		3.07 (1.6)	
	Indian	6.42 (2.1)		3.29 (2.2)	
	Others	6.42 (2.0)		2.92 (1.7)	
	Job	Employee	6.23 (1.9)	0.60 <sup>b</sup>	3.15 (1.6)
	Self-employed	5.74 (1.5)		3.59 (2)	
	Student	6.06 (2.0)		2.56 (1.9)	
	Unemployed/Retired	6.31 (2.4)		4 (2)	
Monthly income	<999	5.7 (2.3)	0.01 <sup>b</sup>	2.61 (2.2)	0.01 <sup>b</sup>
	1000-2999	5.43 (1.9)		2.78 (1.6)	
	3000-5999	6.38 (1.7)		3.46 (1.9)	
	>6000	6.81 (1.7)		3.69 (1.5)	
Duration of travel	<2 weeks	6.14 (2)	0.71 <sup>b</sup>	3.08 (1.7)	0.27 <sup>b</sup>
	2-3 weeks	6.27 (1.6)		3.6 (2)	
	>3 weeks	5.75 (2)		3 (1.7)	

<sup>a</sup>P by independent *t*-test and <sup>b</sup>P by ANOVA test

to enable them to identify these abnormalities and seek help early if appropriate.

For attitude towards travel health, more than 70% of participants in this study could not identify travel health hazards, which could be described as minimal and similar to a study conducted in Oman.<sup>[21]</sup>

Males also scored higher than females, showing a good attitude. Data are not directly available on gender-related differences in attitudes. However, when we look at motivational aspects, women were a predictor of being active, well informed, and involved in health-related information.<sup>[22]</sup> Participants' 'work and income roles play vital roles in travel health literacy in fostering positive travel health attitudes. In this study, self-employed and high income associated with good travel health attitudes. This is probably because self-employed people have more time to get details, as they do not have set working hours.

## Conclusions

Wide differences in awareness and attitudes towards travel health suggest that there is a great deal of room for improvement in global health. It is important to increase awareness about the information on travel health, vaccinations, and services among travelers. Pretravel health information could be promoted among travelers as one of the checklists before traveling using social media, travelers, and global health groups.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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