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Travelers' expectations in pre-travel consultation: a prospective study

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Abstract

Background: The aim of this study was to explore travelers' expectations from a pre-travel consultation and to determine whether the pre-travel counseling met their needs.

Methods: The study was carried out in 2015 at the Travel clinic of the University Hospital of Lausanne. Prior to the consultations, travelers had to indicate their specific expectations from the consultation and had to estimate their perception of risk, dangerousity and knowledge using ten-points scales for the following 11 essential health topics usually discussed in a pre-travel consultation: fever, malaria, diarrhea, road traffic injuries (RTIs), solar injury, insect bites, swimming accidents, rabies, cardiac diseases, sexually transmitted infections (STIs), and mountain sickness. After the consultation travelers and professionals had to give an assessment of the way the 11 topics had been discussed.

Results: 252 travelers were approached. The three questionnaires were completed for 146 of them. Mean age was 39.5 years and 139 had already traveled to extra-european countries. The most frequent topic expected to be addressed was vaccinations (66.4%) followed by general information (47.9%), malaria (20.5%) and travel pharmacy (15.1%). In terms of risk perception, 5.5%, 3.4% and 2.7% of travelers perceived a high risk for malaria, STIs and rabies, respectively. 56.8% of all travelers considered the dangerousity high for STIs, 54.8% for malaria and 49.3% for rabies. In terms of knowledge, 25.3%, 24.0% and 15.1% of travelers reported a high level of knowledge for fever, malaria and rabies, respectively. Most travelers were satisfied with the advice given (mean score 8.9 ± 1.6). Malaria, insect bites, rabies and fever were sufficiently discussed according to more than

85% of all travelers and according to more than 90% of health professionals. In comparison, 55.5%, 52.7% and 47.9% of all travelers reported that RTIs, solar injury and STIs were discussed sufficiently.

Conclusion:

These results show that travelers have no pre-defined expectations outside vaccinations when attending a pre-travel consultation. Travelers with little knowledge or misperceptions of dangerousness for travel-related health problems should be better identified in order to give them targeted advice.

Keywords: travel medicine, travel health advice, risk perception

1. Introduction

In 2015, 1.184 billion tourists travelled the world and the United Nations World Tourism Organization (UNWTO) projects international tourist arrivals to grow by 4% worldwide in 2016, especially in Asia and the Pacific (+4-5%), and the Americas (+4-5%)(1). Reasons for travel are various, mainly leisure (53%) and business or studies (14%), but also visiting friends and relatives (VFR), religious reasons, and health treatment (27% altogether)(2).

The significant expansion and diversification of tourism exposes an increasing number of travelers to numerous risks (3). Most health problems are mild and self-limited, but they are reported by 22% to 64% of travelers visiting the developing world, and 8% of the travelers going to these regions are ill enough to seek health care either while abroad or upon returning home (4). Among common health problems, diarrhea is the most frequent illness that affects travelers to low-income countries (10- 40% for 2-week trips) (5).

However, morbidity and mortality patterns are changing over time. Travel out of Europe carries a higher mortality risk, caused by cardiovascular events as well as traffic accidents, much more than fatal infections (6) (7) (8). In fact, with an increasing availability of immunizations, as well as prophylactic and curative treatments, infectious diseases now cause only a small proportion (<2%) of reported deaths (9).

Since the topics are numerous, and the duration of consultation limited, health professionals are faced with difficult choices when giving pre-travel advice. Moreover, they have to consider travelers' subjective sense of risk (3). The travelers' point of view often remains unknown since pre-travel communication is essentially driven by the professional in order to give concise information. Furthermore, some studies have shown that travelers' knowledge is limited. A study conducted in the United States has shown that even if the majority of travelers consider vaccination efficient for prevention, only a few of them were

vaccinated during their trip : 11% for tetanus, 14% for hepatitis A, 13% for hepatitis B, and 5% for yellow fever (10). In Europe, about 50% of travelers going to no-risk region are unnecessarily concerned about malaria (11).

More information about travelers' self-perception of risk, dangerousity and knowledge of travel-related health issues and better understanding of prior knowledge and expectations of travelers' would help health professionals to better meet travel clinic clients' needs. The aim of this study was to investigate travelers' expectations when attending a pre-travel consultation and explore the final advice provided.

2. Material and methods

This was a prospective study carried out from September to December 2015 at the travel clinic of the Department of Ambulatory Care and Community Medicine, University of Lausanne, Switzerland. Nurses, doctors, and pharmacists provide over 10'000 pre-travel consultations per year. Inclusion criteria for study participants were as follows: age \geq 18 years, French speaking, visiting the clinic for the first time for their planned trip. Travelers coming only for a booster vaccination were not included.

Travelers who met the inclusion criteria and agreed to participate were asked to fill out two questionnaires. The first questionnaire was given by the investigator before the pre-travel consultation in the waiting room, and included the following information: gender, date of birth, nationality, reason for travel [tourism, work, visiting friends and relatives (VFR), adventure, pilgrimage and "other"], travel destination(s), departure date and duration, number of previous trips out of Europe, previous information about potential health issues, and medical history including serious illness in the past, chronic disease, regular intake of drugs. In order to explore their specific expectations, travelers had to mention up to 3 topics that they

wanted to be discussed during the consultation. Furthermore, for 11 items considered by the International Society of Travel Medicine (ISTM) as essential topics to be discussed in a pre-travel consultation (12) [fever, malaria, diarrhea, road traffic injuries (RTIs), solar injury, insect bites, swimming accidents, rabies, cardiac diseases, sexually transmitted infections (STIs), and mountain sickness], travelers had to rate the probability that these problems could happen to them in order to evaluate their risk perception, but also how they perceived the dangerousness, namely the severity of these problems, and finally how they perceived their own knowledge. To assess risk perception, the following question was asked: “According to you, what is the probability to suffer from the following issues on your upcoming trip?” and travelers were asked to use a ten-point scale ranging from “Not probable” to “Very probable”. To assess danger perception, the question was: “Regarding the following items, how do you perceive their dangerousness?” and the ten-point scale ranged from “Not dangerous” to “Extremely dangerous”. Finally, to evaluate their self-perception of knowledge, the following question was asked: “What is your level of knowledge about the following issues that might arise on your trip?” and travelers were asked to use a scale ranging from “No knowledge” to “Excellent knowledge”. In order to analyze these results, answers ranging from 0 to 3 were classified in the “low” group, 4 to 6 were part of the “middle” group, and 7 and above were classified in the “high” group.

The second questionnaire, given at the end of the consultation, aimed to assess traveler’s satisfaction about the consultation using a ten-point scale and to evaluate if it had met their expectations. The travelers had to comment how extensively the 11 above-mentioned essential topics of a pre-travel consultation had been discussed (Not discussed, partially, sufficiently, too much, not applicable). The health care professionals were also given a questionnaire at the end of the consultation in order to evaluate the general knowledge of the travelers using a 0 to 10 scale. For the 11 above-mentioned topics, they had to say which items were discussed and how, in the same way as the travelers did. The

questionnaire included a space for comments. The three questionnaires were constructed using the software Survey Monkey and were anonymized for the data analysis.

Data processing and statistical analysis were carried out in Microsoft Office Excel 2011. The Chi-square test was used to compare proportions and p-values of 0.05 or less were considered statistically significant. Countries were categorized into regions using the Center for Disease Control and Prevention classification and were aggregated in the following categories: Africa, Asia, South America/Central America and Caribbean, Europe, Oceania. For “Reason for travel”, ‘adventure’ and ‘tourism’ were grouped together. For those who mentioned several reasons in the category “other”, the main reason was chosen (for example: “travel and work” was considered as “work “). The medical history enabled us to know more about what travelers may face during their trip. Illnesses were classified in categories: infectious disease, cardiovascular disease, cancer and other. Perception of risk, dangerousness and knowledge for cardiac diseases were only relevant for the 60 years and older group including 20 travelers so cardiac problems are not illustrated in figures.

3. Results

Demographics and destinations of interviewed travelers

252 travelers were approached and 47 were excluded because of not meeting inclusion criteria (Figure 1). All 3 questionnaires were available for 146 travelers and the analysis was based on this population.

Characteristics of the study population and travel destinations are described in Table 1. Since 10 travelers (6.8%) planned to visit two regions or more, the total number of visits is higher than the number of travelers. 74 participants (50.7%) were males. Asia was visited by

64 travelers (43.8%), Africa by 55 travelers (37.7%) and South/Central America by 32 travelers (21.9%). 6 travelers went to Oceania, 1 to Europe and 1 to North America and these participants were classified in the “Other” category. The median duration of stay was 18 days (range 2 - 384 days). Previous experience of travel out of Europe was reported by 139 travelers (95.2%) and 97 of them (69.8%) more than 5 times. Prior to the travel consultation, most travelers (84.9%) had sought travel health information, mainly on the internet, but also using travel guide books, as well as asking health professionals. In terms of reasons for travel, the participants were mostly traveling for leisure (69.2%). Of all participants, 15.8% traveled for business or study and 8.9% for VFR. Chronic diseases were mentioned by 13 travelers (8.9%), mostly asthma, hypertension and high cholesterol. 14 travelers (9.6%) reported major previous medical issues, such as cancer (4), infections (4), and cardiac diseases (3).

Topics expected to be discussed by travelers

In an open question, travelers were asked to mention up to 3 topics they wished to discuss during the consultation. 286 topics were mentioned by the participants and were grouped into main categories. As shown in Figure 3, 66.4% of the travelers mentioned vaccination, then general information or no specific question (47.9%), malaria (20.5%), travel pharmacy (15.1%) and gastro-enteritis prevention (11.6%). Other specific infectious diseases such as yellow fever or typhoid fever were not commonly expected to be addressed. Rabies was mentioned by 7.5% of the travelers.

Perception of risk, perception of dangerousity and self-perception of knowledge

Figure 2 shows how travelers perceived risk, dangerousity and their own knowledge regarding 9 potential health issues. Mountain sickness and cardiac disease were not included in this figure, as very few travelers were concerned.

As can be seen in Figure 2a, travelers considered the risk to be highest for insect bites (51.4%) followed by diarrhea (37.0%) and solar injury (20.5%). Only 5.5%, 3.4% and 2.7% of all travelers considered the risk high for malaria, STIs and rabies, respectively.

Figure 2b illustrates that participants perceived the dangerousity to be the highest for STIs (56.8%), followed by malaria (54.8%) and rabies (49.3%), while 15.8% considered the dangerousity high for diarrhea, 14.4% for swimming accidents and 10.3% for solar injury.

41.8%, 41.1% and 39% of travelers estimated having good knowledge about solar injury, STIs and diarrhea, respectively (figure 2c). In comparison, only 25.3%, 24.0% and 15.1% of travelers considered having a high level of knowledge for fever, malaria and rabies, respectively.

Regarding cardiac risks, 91.3% of travelers under 60 years old (including 126 participants) perceived themselves at low risk and 51.6% considered the dangerousity high. In this same group, 52.4% reported having a low level of knowledge. In the 60 years and older group (involving 20 participants), 18 travelers (90%) considered the risk low for cardiac problems, the danger was considered high for 55% of them and 30% reported having a low level of knowledge.

Post-consultation evaluation by travelers and health professionals: Satisfaction and discussion of topics

Travelers were asked to rate the usefulness of the consultation on a scale from 0 to 10. Participants were generally satisfied with the advice given since the mean score was 8.9 ± 1.6 and median 10 (range 2 to 10).

Table 3a shows for each health issue the proportion of travelers reporting how the topics were discussed. Malaria, insect bites, rabies and fever were sufficiently discussed according to 94.5%, 92.5%, 88.4% and 85.6% of all travelers, respectively. In comparison, only 55.5%, 52.7% and 47.9% of all travelers reported that RTIs, solar injury and ISTs respectively were discussed sufficiently, although for over 90% of travelers these topics were applicable to their situation. Small proportions of travelers (<2.7%) reported that the topics were discussed excessively.

Table 3b presents the way that topics were discussed during the consultation according to health professionals. Fever, rabies, insect bites and malaria were sufficiently discussed in 94.5%, 92.5%, 91.8% and 88.4% of all consultations according to them. In comparison, health professionals reported that solar injury and swimming accidents were both sufficiently discussed in 55.5% of consultations and STIs in 32.9% of them.

Fever was partially discussed according to 9.6 % of travelers and 2.7% of the professionals. Addressing the issue of STIs was not considered as applicable in 9.6 % of all consultations according to travelers and in 21.2% of the consultations according to health professionals.

In the 60 years and older group, the results show that in 14 consultations (70%), cardiac diseases were partially or not discussed, and in only 6 (30%) consultations was this topic discussed sufficiently.

Lastly, a general evaluation of traveler's knowledge was made by professionals using 0 to 10 scales and the mean score was 6.3 ± 1.9 .

4. Discussion

Travel patterns are diverse and changing over time and travelers' expectations remain an important information for health professionals. Travelers' expectations are based on several factors such as previous experience, prior information (travel book, internet) but also their subjective perception of risk, dangerousity and knowledge. The purpose of this study was to explore travelers' expectations prior to pre-travel consultation and to compare this information to the advice provided by health professionals at the travel clinic. The characteristics of travelers included in this study indicate that most of them were experienced travelers as 95% of the subjects had previously traveled out of Europe and 70% of them more than 5 times. Interestingly, there were significantly more participants traveling for business or study (15.8%) than VFR (8.9%), while in another study carried out in Switzerland on travelers' profile, travel patterns and vaccine practices, there were more VFR travelers (17.6%) than business or study travelers (12.1%) ($p < 0.05$) (13).

The most frequent expectation of travelers for the pre-travel consultation was to receive immunizations indicating that, in the traveler's mind, vaccination is still the most important measure to prevent travel-related health problems. This is to some extent in contradiction with the reality as only about 2% of travel related deaths are due to infectious diseases. Almost half of participants were seeking general information without any specific expectations. On one hand, this means that travelers are open to receive any information, but on the other hand, it is surprising that they have no precise expectation, especially so

because 84.9% of them had already searched for travel health information before coming to the clinic.

Risk perception, i.e. the risk of being exposed to dangers, is a crucial prerequisite to be motivated to change behavior and travelers should feel personally at risk (14). In this study, the results show that travelers perceived the common risks of insect bites, diarrhea, and sun-associated problems in an appropriate manner. As an example, the attack rate of traveler's diarrhea during a 2-week trip is 10% to 40%, depending on destination and traveler characteristics (5). It remains, therefore, an important topic of a pre-travel consultation and travelers risk perception seems to be accurate. On the other hand they underestimated the risk for STIs and rabies. 89% of them considered the risk of STI to be low. Nevertheless, the literature shows that 1 international traveler out of 5 has a new sexual partner and the risks of developing an STI is increased up to 3-fold in people who experience casual travel sex (15). The risk of STI is probably underestimated by travelers because casual sex abroad is often not anticipated. Concerning rabies the incidence rate per month during a stay in developing countries for animal bite with potential rabies exposure is higher than malaria with or without chemoprophylaxis (16), whereas in this study travelers considered the risk for rabies to be lower than for malaria. It must however be acknowledged that this question was not ideally formulated. It was indeed not clear if the risk of the disease itself or the risk of animal bites with potential rabies exposure was evaluated.

Dangerosity of several travel related health issues was misevaluated. Rabies was underestimated by the participants since less than half of them considered the danger to be high. Even if rare, rabies is a deadly disease and the effectiveness of pre- and post-exposure depends on a promptly exposure recognition. Travelers should be reminded of the consequences of animal bites. Participants perceived the dangerosity to be the highest for STIs (56.8%) and this could be explained by the fact that most participants associated STIs with HIV, but the analysis does not enable us to determine the significance of this finding.

Lastly, although fever was not considered dangerous in this study population, it remains one of the leading causes of consultation among travelers returning from the tropics and it can be caused by diseases that are rapidly fatal if left untreated.

In terms of knowledge, the lack of good knowledge regarding fever, malaria and rabies is surprising, as most of them were experienced travelers. Thus, even if most of the clinic attendees are used to travel, there seems to be a real lack of knowledge about some important travel related health issues.

According to the Infectious Diseases Society of America guidelines(17), topics and advice that should be covered for all travelers include avoidance of insects, malaria chemoprophylaxis for itineraries with a malaria risk, vaccine-preventable illness, prevention and self-treatment of traveler's diarrhea, and STIs. Other studies suggest addressing the issue of cardiovascular risk and road traffic injuries. The post-pretravel consultation evaluation showed that most of these topics were discussed and most travelers were satisfied. Interestingly, these experienced travelers did not report that the topics were discussed for too long even if their main request was to address the issue of vaccination. However, some topics such as solar injury, RTIs, swimming accidents and STIs were not systematically addressed although for over 90% of travelers these topics were applicable to their situation. Also, these topics were not part of the topics expected from the consultation. Regarding solar injury, most travelers are aware of the risk and their self-perception of knowledge is accurate. Health professionals might have considered that these travelers had enough information. Regarding road traffic injuries, travelers are now 10 times more likely to die from injuries than from infectious diseases and 80% of road traffic deaths take place in middle-income countries (9) (18). It remains therefore an important topic in pre-travel consultation and travelers should be reminded that safety measures are not the same abroad.

Regarding cardiovascular issues, most travelers perceived themselves at low risk. Travelers 60 years and older probably underestimated their risk of cardiovascular events. Although level of knowledge was insufficient to most travelers, this topic was only discussed in a few cases. Since cardiovascular events are responsible for a large proportion of deaths abroad, this topic should be included in a pre-travel consultation, at least for the elderly travelers. In patients identified to be at risk, the professionals should make sure that a cardiovascular risk check has been made in the previous months by a specialist or general practitioner, and travelers should be informed about the potential problems they may face.

In terms of limitations, the question about topics that travelers expected to be addressed was asked after the travelers had given their evaluation of risk, dangerousness and knowledge of the 11 most frequent travel-related health topics. It could be argued that this question should have been asked at the beginning of the survey to avoid bias. However, it seems that the answers were not influenced by the prior questions, as most travelers had either no specific expectations or wanted just to discuss vaccinations. A limitation of this research is the challenge to report on risk and danger perception to achieve measurable results and compare this information to the risk of exposure and mortality rate. Furthermore, the sample size was small and the results should be taken carefully in terms of representativeness. Another limitation relates to the various topics to discuss during the consultation. Health care professionals might have had difficulties in assessing the risk of potential dangers when travelers don't plan to take the risk and some activities are not planned before the trip. For the future, it would be interesting to evaluate travelers' perception of risk and danger for more specific categories of travelers (according to their destination or way of traveling).

In conclusion these results show that travelers have rather general expectations outside vaccinations when attending a pre-travel consultation. Travelers with little knowledge or misperceptions of dangerousness for travel-related health problems should be better identified

in order to give them targeted advice. For this purpose, it could be interesting to use in routine practice a pre-consultation questionnaire to evaluate travelers' knowledge and needs.

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Figures

Figure 1:

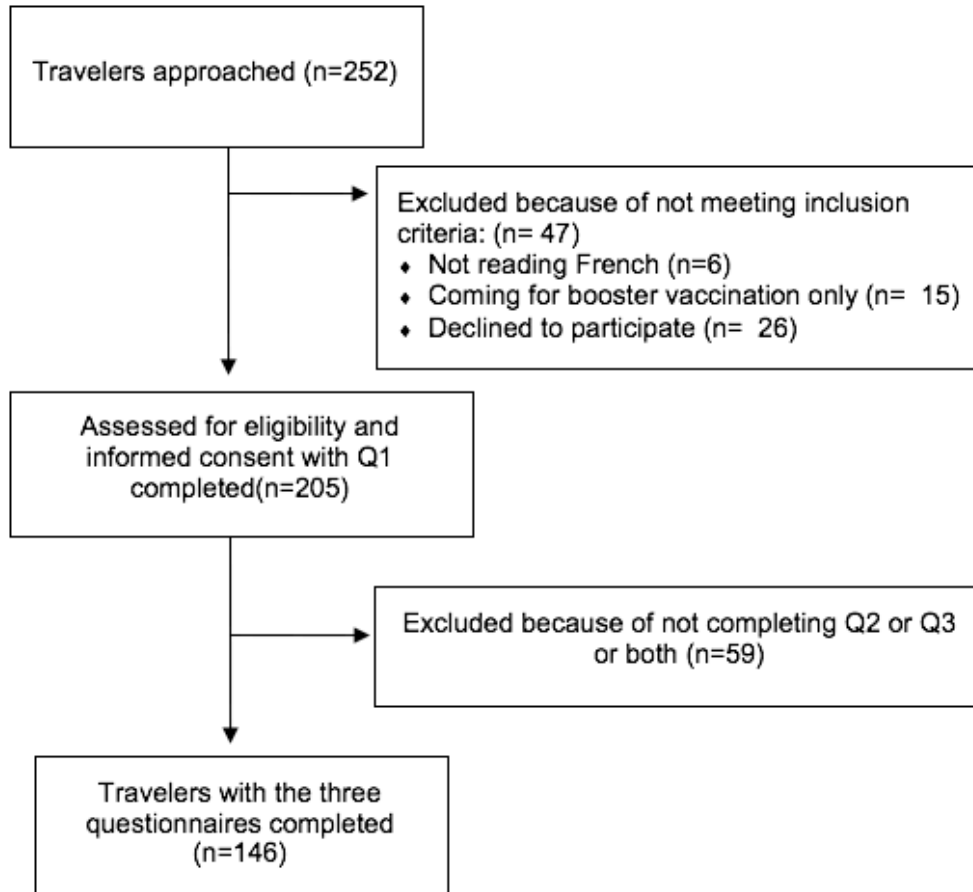
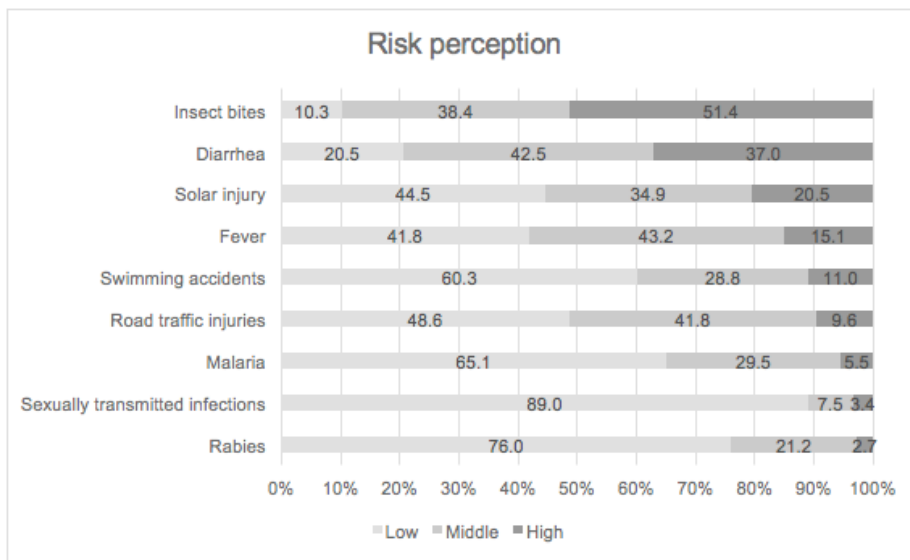


Table 1: Demographics and destinations of interviewed travelers (n=146) presenting for pre-travel consultation at the travel clinic

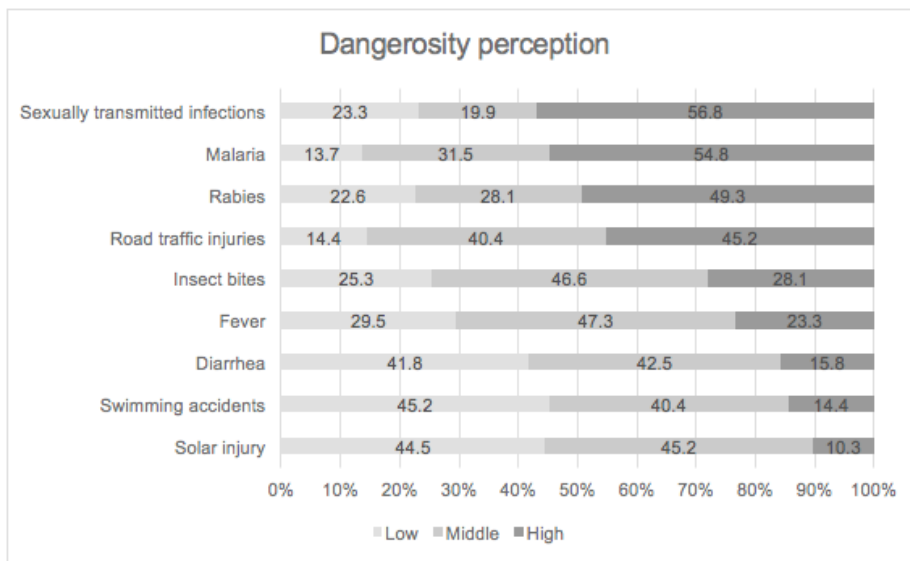
	All	Asia	Africa	South and Central America	Other (Oceania, Europe and North America)
	(n=146) n(%)	(n=64) n(%)	(n=55) n(%)	(n=32) n(%)	(n=7) n(%)
Gender					
Male	74 (50.7)	31 (48.4)	32 (58.2)	13 (40.6)	5 (71.4)
Female	72 (49.3)	33 (51.6)	23 (41.8)	19 (59.4)	2 (28.6)
Age					
18-30	61 (41.8)	27 (42.2)	19 (34.5)	19 (59.4)	6 (85.7)
31-59	65 (44.5)	28 (43.8)	28 (50.9)	10 (31.3)	1 (14.3)
> 60	20 (13.7)	9 (14.1)	8 (14.5)	3 (9.4)	0 (0.0)

Figure 2: Self-perception of risk, dangerosity and knowledge of 9 topics recommended to be part of a pre-travel consultation

2a



2b



2c

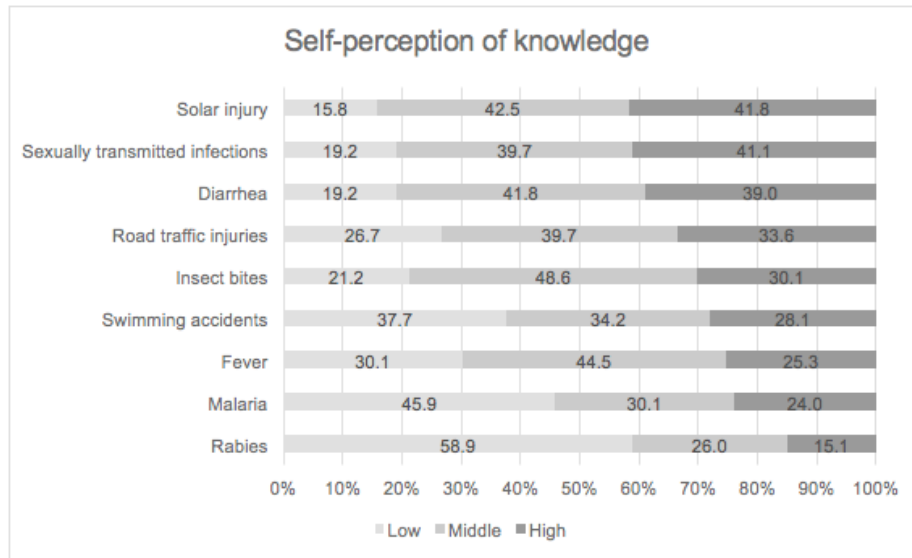


Figure 3: Topics expected to be discussed during the pre-travel consultation

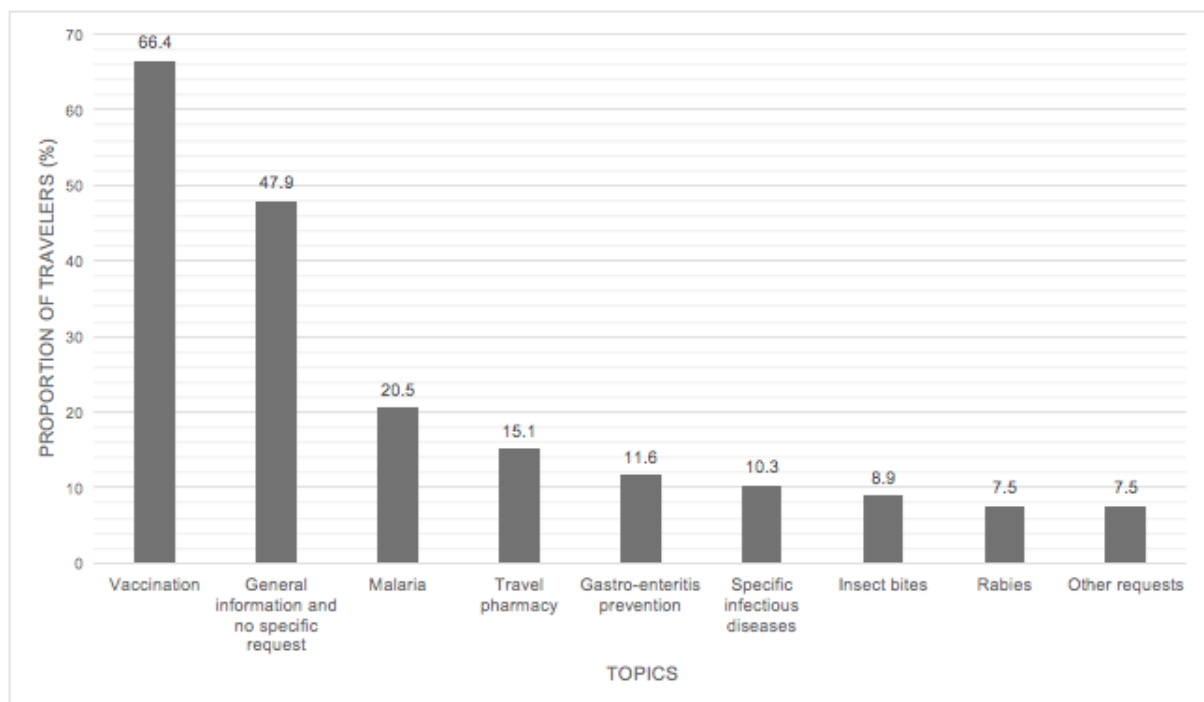


Table 2: Discussion of 9 topics during pre-travel consultation: evaluation by travelers and health professionals after the consultation

2a. Evaluation by travelers

	Sufficiently		Too much		Partially		Not discussed		Not applicable	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Malaria	138	94.5	1	0.7	3	2.1	3	2.1	1	0.7
Insect bites	135	92.5	4	2.7	3	2.1	3	2.1	1	0.7
Rabies	129	88.4	3	2.1	6	4.1	6	4.1	2	1.4
Fever	125	85.6	2	1.4	14	9.6	4	2.7	1	0.7
Diarrhea	118	80.8	2	1.4	8	5.5	17	11.6	1	0.7
Swimming accidents	85	58.2	2	1.4	21	14.4	32	21.9	6	4.1
Road traffic injuries	81	55.5	1	0.7	22	15.1	34	23.3	8	5.5
Solar injury	77	52.7	2	1.4	20	13.7	43	29.5	4	2.7
Sexually transmitted infections	70	47.9	2	1.4	23	15.8	37	25.3	14	9.6

2b. Evaluation by health professionals

	Sufficiently		Too much		Partially		Not discussed		Not applicable	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Fever	138	94.5	0	0.0	4	2.7	4	2.7	0	0.0
Rabies	135	92.5	1	0.7	5	3.4	4	2.7	1	0.7
Insect bites	134	91.8	1	0.7	6	4.1	5	3.4	0	0.0
Malaria	129	88.4	2	1.4	8	5.5	0	0.0	7	4.8
Diarrhea	115	78.8	2	1.4	17	11.6	11	7.5	1	0.7
Road traffic injuries	92	63.0	1	0.7	24	16.4	24	16.4	5	3.4
Solar injury	81	55.5	0	0.0	19	13.0	45	30.8	1	0.7
Swimming accidents	81	55.5	0	0.0	30	20.5	25	17.1	10	6.8
Sexually transmitted infections	48	32.9	0	0.0	27	18.5	40	27.4	31	21.2