

Knowledge and Attitude of Travellers Regarding Yellow Fever Vaccination

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ABSTRACT

Background: A large number of Indians travel to yellow fever endemic countries for job opportunities. However, till date, little is known about their knowledge and attitude about yellow fever vaccine. This study was, therefore, carried out to determine the traveller's knowledge and attitude regarding yellow fever vaccination. **Method:** A cross-sectional questionnaire-based study was carried out at an outpatient clinic for travellers. A total of 307 responses were collected from the travellers who visited the clinic for yellow fever vaccination, in a pre-designed standardized self-administered questionnaire. **Result:** The average age of travellers was 37.3 ± 4.5 years. Most of the travellers (77%) were not aware of yellow fever before being advised for the vaccination. The most common reason for travelling abroad was a business trip (46%). Half of the travellers did not know about duration of protection from yellow fever vaccine. Approximately 90% of the travellers did not know about the etiology of yellow fever. Close to 40% of the travellers thought that yellow fever vaccine was effective in providing protection, while the rest didn't possess adequate knowledge about its efficacy. **Conclusion:** Over three-fourths of the travellers were unaware of yellow fever infection and the vaccination. There is need of creating awareness regarding yellow fever among travellers.

Key words: India, Travellers, Travel clinic, Yellow fever, Yellow fever vaccine.

INTRODUCTION

Yellow fever is a vector-borne viral disease transmitted through the bite of an infected mosquito (*Aedes* or *Haemagogus* species). It is endemic to countries in South America and sub-Saharan Africa.¹ Yellow fever has a high global morbidity and mortality.² Most of the yellow fever infections are not recognized because of the inadequate surveillance and reporting.³ There is no treatment available for yellow fever; hence, prevention is essential to avoid the risk of morbidity and mortality. Yellow fever vaccination has been recommended for persons living in or travelling to yellow fever endemic countries, international travellers and those laboratory personnel who might be exposed to the virulent yellow fever strain.⁴ In India, yellow fever vaccination is required only for travellers to yellow fever endemic countries in South Amer-

ica and Africa.⁵ Till now, there is no case of yellow fever reported in India. As yellow fever is not endemic to India, so it is fair to understand the Indian travellers being unaware of it. A search of the literature has shown that traveller's knowledge and attitude regarding yellow fever vaccination has never been Studied. This study has made an attempt to fill this gap through an outpatient setting in Northern India.

METHODS

This cross-sectional study was carried out over a period of one year. The healthy travellers who attended the clinic to receive yellow fever vaccine were included in the study. This study was carried out with the sole purpose to assess the knowledge and attitude of the

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travellers regarding the use of yellow fever vaccine in healthy Indian travellers. The development and evaluation of this questionnaire were carried out in three steps, including questionnaire generation, pilot study to assess the content and face validity of the questionnaire and final validation of the questionnaire in 307 healthy Indian travellers.

Questions were drafted after an extensive literature review. Search for knowledge, attitude and practice of travellers toward yellow fever vaccination using the Medline and google scholar revealed that there was no reliable and valid tool to assess the travellers' knowledge and attitude regarding the yellow fever vaccination. On the basis of review of literature, the final questionnaire included 12 close ended questions to assess the knowledge and attitude. Internal consistency reliability (Cronbach's Alpha) was determined in the pilot study in 20 participants. For face validity, seven experts in the field have reviewed the questionnaire separately and answer "how well the questionnaire measures the knowledge, attitude, and practice of travellers about yellow fever vaccination". The content validity of the questionnaire was determined for its clarity, relevancy, and consistency of each question in 5 experts in yellow fever vaccination.⁶

Travellers vaccinated with yellow fever vaccine were asked to fill the questionnaire. The questionnaire was administered in interviewer mode in cases where the participants were unable to fill the form by himself. According to the sample size calculation, 264 travellers were required according to an estimation error of 5% (0.05) and a 90% confidence level.

Data obtained from each questionnaire were tabulated on the basis of the response obtained for every choice per question divided by the total number of responses obtained. Percentage of response for each category was calculated based on the number of option answer divided by the total number of responses.

Average \pm SEM was used for expressing quantitative variables. The analysis was performed by using the SPSS 20 (SPSS Inc. Chicago, Illinois, USA) and Microsoft Excel software. A p-value of < 0.05 was considered statistically significant.

This study was conducted in full compliance with the principles of the Declaration of Helsinki III and in accordance with the International Ethical Guidelines for Biomedical Research Involving Human Subjects. The confidentiality of participants was respected and no information on the participant's name or identity was released or published in any form.

RESULTS

General Characteristics of the travellers

A total of 307 travellers' responses were collected. The average age of travellers was 37.3 ± 4.6 years. Over, 75% of the participants were male. 91% of the travellers were vaccinated against yellow fever vaccine for the first time. Only 9% had been vaccinated earlier. Over, one third of the travellers were destined to Africa followed by throughout world and South America (14 & 8%, respectively). Business (46%) was found to be the most common reason for travelling to foreign destinations followed by employment (31%), personal reasons (17%) and tourism (6%).

Internal consistency and reliability

The value of Cronbach's alpha (a test of internal consistency) was 0.819 (95% CI: 0.820-0.913) for the twelve items in the questionnaire; this shows significant intra-class correlation coefficient ($p < 0.05$). Twelve questions of the questionnaire showed excellent test-retest reliability (Spearman's rank correlation coefficient = 0.814; $p < 0.05$).

Awareness of travellers to vaccine

It was found that 77% of the travellers were unaware of yellow fever before they were advised for yellow fever vaccination. Approximately 90% of the travellers did not know about the causative organism for the yellow fever. Of all, 36% of the travellers did know the various preventive strategies and methods to avoid yellow fever infection. Nearly half of the travellers knew that yellow fever vaccine will provide protection up to 10 years. 65% of the travellers were unaware about the other vaccinations required for the travellers. Only 39% of the travellers knew that the yellow fever vaccine starts providing protection after 10 days. 59% of the travellers were unaware about the time period after which yellow fever vaccine starts providing protection. 3% of the respondents, believed that it will start providing protection immediately. 64% of the travellers knew that the yellow fever infection was common in sub-Saharan Africa and America, while 36% of the travellers were unaware about the countries prone to yellow fever.

Yellow fever vaccine availability in India

According to 42% of the respondents, yellow fever vaccine was easily available in India. Only 35% of travellers confirmed that yellow fever vaccine was not easily available in India. Moreover, 23% of the

travellers were unaware about the availability of vaccine.

Cost of yellow fever vaccine

47% of the travellers believed that the yellow fever vaccine was expensive followed by 28% who thought the cost is “fair enough”. For 17% of the travellers, the cost was either reimbursed or they afforded to pay out of pocket. Another 8% of the respondents had chosen not to answer this question.

Recommendation for yellow fever vaccine

For 38% of the travellers, travel agent/embassy was the most common source for the recommendation for yellow fever vaccination followed by friends and employer (28%, each). In 2% of the travellers, vaccination was recommended by a doctor.

Attitude toward vaccination

Approximately 40% of the travellers thought that yellow fever vaccine was effective in providing protection. 25% of the travellers appeared keen on getting certificate of yellow fever vaccination without getting vaccinated. Half of the travellers knew that yellow fever vaccine is safe, while another half did not.

DISCUSSION

This discussion is based on the result from 307 travellers. Three fourth of the travellers were unaware about yellow fever as yellow fever disease is not endemic in India. This explains the lack of awareness regarding yellow fever in people in the Indian subcontinent. The travellers were found unaware regarding travel health in the study carried out by Hamer *et al.* in United States.⁷ It was found from the responses of the vaccinated travellers that they were taking vaccine only to meet the mandatory requirement of vaccination as imposed by the country of destination. Only 10% of the travellers were aware about the causative organism for yellow fever.

From the responses obtained, it was also found that less than 40% of the travellers were aware about the various methods to avoid yellow fever infection. Less than a 50% of the travellers were aware about the fact that vaccination will provide protection for duration up to 10 years. Huang *et al.* have shown that the 60% of the travellers did not know the current revaccination interval for yellow fever vaccination.⁸ Only 39% of the travellers were found to be aware that the vaccine will start providing protection after 10 days of the vaccination. The results were found comparable to those of Krief *et. al*⁹

Most of the respondents in the study came from the northern parts of India. Vaccination was easily available to only 42% of the travellers because they came from areas very close to the study site. 35% of the vaccinated travellers had come from far off areas for vaccination. This was largely because they did not have a vaccination facility close to their native cities. The cost of vaccination was ‘high’ according to approximately half of the travellers. This comparison is with respect to the cost at public hospitals. Some manufacturers make the vaccine available as single dose vial. In contrast to this, the vaccine usually available at public hospital is a multi-dose vial. The cost of single dose vaccine, often used in the private setting, will be certainly higher.

25% of the vaccinated travellers were comfortable getting a certificate for vaccination without actually getting the vaccination. The reason for this could be their being unaware of the risk of yellow fever. Another thought that it was just for the sake of permission of travelling & not for the protection against yellow fever could have contributed to this finding. Finally, almost half of the travellers believed that yellow fever vaccination was safe. The reason for this trust in vaccination was a previous experience of someone known who was vaccinated with yellow fever vaccine. The study by Tiwari *et al.* in confirmed that the yellow fever vaccine is safe and well tolerable in healthy Indian travellers.¹⁰

CONCLUSION

Over three-fourths of the travellers were unaware about yellow fever infection and the vaccination. There are very limited options for getting yellow fever vaccine in India. There is need of creating awareness regarding yellow fever among travellers and increasing the number of authorized centres offering this vaccine. These findings form an initial impression of the knowledge and attitude of the travellers towards the Yellow fever vaccine. To the best of the knowledge of the investigators, there are no such reported findings yet in the Indian context.

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CONFLICT OF INTEREST

None

ABBREVIATION USED

SEM= Standard error of the mean

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