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Knowledge and attitude of Indian expatriate working at Gondar, Ethiopia regarding yellow fever vaccination: a survey

Digambar B. Ambikar^{1*}, Kavyashri B. Joshi², Ashok M. Bhosale²

¹Department of Pharmacology, Indira College of Pharmacy, Tathawade, Pune, Maharashtra, India ²PVP's Padmashri Vikhe Patil College of Arts, Science and Commerce, Pravaranagar, Maharashtra, India

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*Correspondence:

Dr. Digambar B. Ambikar,

E-mail: pharmascholy@gmail.com

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ABSTRACT

Background: Ethiopia is one of the yellow fever endemic country, located in north east Africa. A large number of Indian expatriates are working in Gondar, a city located in Amhara region of country. Though yellow fever vaccination is mandatory to travel to Ethiopia but less information is available about knowledge and attitude of Indian expatriate regarding yellow fever vaccination. This study was, therefore undertaken to determine the knowledge and attitude regarding yellow fever vaccination amongst Indian expatriate working at Gondar, Ethiopia.

Methods: A cross-sectional questionnaire-based study was carried out by dispensing the questionnaire to individual expatriates. 157 responses were collected from expatriate by a pre-designed standardized self-administered questionnaire.

Results: The average age of expatriates was 46.62±1.28 years. Most of the expatriate (61%) were not aware of yellow fever before being advised for the vaccination. Many of them have taken the vaccine, because it was mandatory for visa process. 62 % of expatriates are aware about the duration of protection from yellow fever vaccine. Moreover 84 % of the expatriates did not know about the etiology of yellow fever. Many of them (69%) believed that yellow fever vaccine was effective in providing protection, while the remaining didn't have adequate knowledge about its efficacy. **Conclusions:** So majority of expatriate didn't have enough knowledge about yellow fever infection and the vaccination. There is need of creating awareness regarding yellow fever among expatriate.

Keywords: Ethiopia, Indian expatriate, Yellow fever, Yellow fever vaccine

INTRODUCTION

Yellow fever is a flavivirus infection that is transmitted through the bite of infected mosquitoes of the species *Aedes* or *Haemagogus* spp. Humans and non-human primates are the main vertebrate hosts of infection. It is endemic in tropical areas of Africa and Central and South America. A wide spectrum of severity is seen in clinical course of infection including asymptomatic infection, mild illness with flu-like symptoms, and severe disease including fever with jaundice or haemorrhage and death.¹

Introduction of yellow fever into urban areas can leads to large explosive outbreaks, which can be difficult to control. In Africa, there is also an intermediate transmission cycle that occurs in rural areas typically at the edges of forests with humans as well as non-human primates affected, and transmission driven by domestic and semi-domestic mosquito species.^{2,3}

Since there is no treatment available for yellow fever; prevention is essential to avoid the risk of morbidity and mortality. Considering this yellow fever vaccination has been recommended for persons living in or travelling to yellow fever endemic countries. Moreover international travelers and those laboratory personnel who might be exposed to the virulent yellow fever strain should take yellow fever vaccination.⁴ Despite the presence of yellow fever vaccine the number of deaths in African and south American countries is very high.⁵ In India, yellow fever vaccination is required only for travelers to yellow fever endemic countries in South America and Africa as yellow fever is not endemic in India.⁶ Every year a large number of Indians move to endemic regions and get vaccinated for yellow fever.⁷ 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 expatriates being unaware of it.⁸

A search of the literature has shown that expatriate's knowledge and attitude regarding yellow fever vaccination has never been Studied. The study has made an attempt to fill this gap through a survey conducted in Indian expatriate working in Ethiopia.

METHODS

This cross-sectional study was carried out over a period of two year (from March 2017 to February 2019). Study conducted at University of Gondar. The healthy Indian expatriates, working at Gondar, Ethiopia and their family members staying with them were included in the study. Most of them were working at university and few others for business, trade and technical work. This study was carried out with the only purpose to assess the knowledge and attitude of the expatriates regarding the use of yellow fever vaccine in healthy Indians working at Gondar, Ethiopia. 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 157 healthy Indian expatriates.

Questions were drafted after an extensive literature review. Search for knowledge, attitude and practice of oversea Indians toward yellow fever vaccination using the various resources revealed that there was no reliable and valid tool to assess the oversea Indians knowledge and attitude regarding the yellow fever vaccination. On the basis of review of literature, the final questionnaire included 10 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 of questionnaire, it was given to three experts in the field. They reviewed it separately and answer "how well the questionnaire measures the knowledge, attitude, and practice of expatriates about yellow fever vaccination". To determine the content validity of the questionnaire for its clarity, relevancy, and consistency of each question it was given to 3 experts in yellow fever vaccination.^{8,9}

Written informed consent was taken from the participants prior to participation, after complete explanation of objective, methods, benefits and potential hazards of study. Expatriate 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 him. According to the sample size calculation, 112 expatriates 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±SEM was used for expressing quantita—tive 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 expatriate

A total of 157 expatriates' responses were collected. The average age of expatriates was 46.62±1.28 years. Over, 85% of the participants were male. 45% of the expatriates were vaccinated against yellow fever vaccine for the first time and 55% had been vaccinated earlier. Over, 72% participant came to Ethiopia as first foreign country while 28% were earlier visited other African countries and throughout world. Most of participants (64%) were working with Gondar University and rests of them were family members of these faculty members and few others were come for business (11%) work.

Internal consistency and reliability

The value of Cronbach's alpha (a test of internal consistency) was 0.876 for the ten items in the questionnaire; this shows significant intra-class correlation coefficient (p<0.05). Ten questions of the questionnaire showed excellent test—retest reliability (Spearman's rank correlation coefficient =0.907; p<0.05).

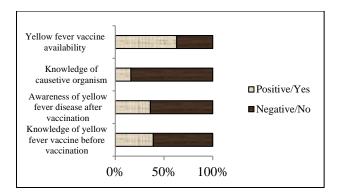


Figure 1: Awareness of participant about yellow fever disease.

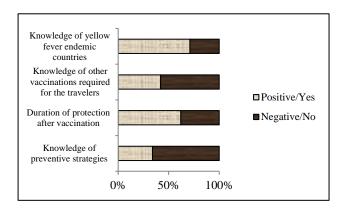


Figure 2: Awareness of participant about yellow fever vaccine.

Awareness about yellow fever

It was found that very few expatriates (39%) were aware of yellow fever before they were advised for yellow fever vaccination. Approximately 84% of the expatriate did not know about the causative organism for the yellow fever. Even after vaccination only 36% participants reported that they know about yellow fever disease, its causes and prevention etc. Rest of the 64% though received yellow fever vaccination but don't know much about it.

Awareness of expatriates to vaccine

Only 34% of the expatriate confirmed that, they did know the various preventive strategies and methods to avoid yellow fever infection. The 62 % of the expatriate knew that yellow fever vaccine will provide protection up to 10 years. 58% of the expatriate were unaware about the other vaccinations required for the travelers. 61% of the expatriate knew that the yellow fever vaccine starts providing protection after 10 days. 37% of the expatriates were unaware about the onset after which yellow fever vaccine starts providing protection. 2% of the respondents believed that it will start providing protection immediately. 71% of the expatriates knew that the yellow fever infection was common in sub- Saharan Africa and America, while 29% of the expatriates were unaware about the countries prone to yellow fever.

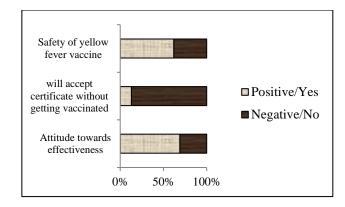


Figure 3: Attitude of participant towards vaccination

Yellow fever vaccine availability in India

According to 63% of the respondents, yellow fever vaccine was easily available in India. Only 26% of expatriates confirmed that yellow fever vaccine was not easily available in India. Furthermore 11% expatriate received the vaccination in Ethiopia since their initial protection period was expired upon completion of 10 years.

Other vaccination

All the expatriate knew that polio vaccine certification is also required for traveling to Ethiopia.

Source of information for yellow fever vaccine

For 71% of the expatriate employer was the most common source of information for yellow fever vaccination. Over, 22% expatriate travel agent was source of information followed by friends (6%). Only in 1% of the expatriates, vaccination was recommended by a doctor.

Attitude towards vaccination

It was found that 69% of the expatriate thought that yellow fever vaccine was effective in providing protection. 13% of the expatriate said they will accept the certificate of yellow fever vaccination without getting vaccinated if available so. 62% expatriate knew that yellow fever vaccine is safe, while rest others did not but majority of them didn't got any adverse effect after vaccination.

DISCUSSION

Yellow fever is prevalent in tropical region of Africa and South America. In order to ensure that yellow fever will not spread in non-endemic countries, international health regulations made certain regulation. These international regulations allow various nations to have yellow fever vaccination as mandatory requirements for entry into their country. The study conducted in 157 participants

showed that many expatriates have poor knowledge about yellow fever. This can be supported by fact that yellow fever disease is not endemic in India. This explains the lack of awareness regarding yellow fever in people in the Indian subcontinent.8 Hamer et al studied knowledge and attitude about travelling associated disorders in United States and reported that, a substantial proportion of the travelers were unaware regarding travel health.¹¹ Tiwari et al in study conducted in India on travelers vaccinated for yellow fever vaccine reported that travelers were taking vaccine only to meet the mandatory requirement of vaccination as imposed by the country of destination. Only 10% of the travelers were aware about the causative organism for yellow fever.8 In the study it was found that 61% of expatriates were not aware of yellow fever before being advised for the vaccination. In rest of expatriates some were heard about it as mandatory requirement to get Ethiopian visa.

In our study, it was found that 66% expatriates though they received yellow fever vaccine but not aware about disease in detail. Moreover they are not aware about the various preventive measures for yellow fever. Since yellow fever card is mandatory requirement for Ethiopian visa and its expiry is of 10 years but 38% expatriates were not aware that it's because of duration of protection which vaccine provide once vaccinated. This number is better than the study carried out by Huang et al in 2010 in Taiwan, where Huang et al reported that 60% of the travelers did not know the current revaccination interval for yellow fever vaccination.¹² Availability of various internet related sources and up gradation of technology may be reason for increased awareness of people about travelling health. From responses obtained, it was also found that 61% of the expatriate aware about onset of protection after yellow fever vaccination. Vaccine starts providing protection after 10 days of vaccination. This result is also better than those of Tiwari et al and Krief et al.8,13 The probable reason may be the expatriates participated in study mostly belong to academic field.

For most (63%) expatriate yellow fever vaccine was easily available but for 26 % respondent it was not easily available and they travelled far from their place to get it. In India Yellow fever vaccine and certificate of vaccination is available on selected centers which are mostly government hospitals/institutes, located in major cities. 11% respondent received yellow fever vaccine in Addis Ababa, Ethiopia. For all of them it was revaccination after specified duration. For 71% of expatriate the source of information was employer guidelines for visa application and it is quite obvious because vaccination is required for immigration and visa and it's not mandatory for resident Indians those who never travelled.

Oral polio vaccine is also one of the requirements for Ethiopian visa. The ministry of health and family welfare, government of India, made it mandatory to get vaccination for polio virus since Ethiopia included in countries with polio virus circulation following importation (ministry). In present study 58% of the expatriate reported that they were unaware about the other vaccinations required for the travelers if any but all 100% aware about compulsory requirement of polio vaccination.¹⁴

Regarding effectiveness of vaccine 69% of the expatriate were believed that yellow fever vaccine is effective. This because of information they received while vaccinating them by experts. The important point to be worried is around 13% of the expatriate are comfortable to accept the certificate of yellow fever vaccination without getting vaccinated if available. More than 60% expatriate found that, the yellow fever vaccination is safe and they didn't had any adverse effect after vaccination. Study conducted by Tiwari et al showed that the yellow fever vaccine is safe and well tolerable in healthy Indian travelers.

CONCLUSION

Nearly half of the expatriates were unaware about yellow fever infection and the vaccination. Most of them getting a vaccination since it is compulsory. These findings create an initial impression of the knowledge and attitude of the Indian expatriate working at Gondar, Ethiopia towards the yellow fever vaccine. From study it is revealed that, there is a need of creating the awareness regarding yellow fever and other travel associated diseases.

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Institutional Ethics Committee

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