

# A cross-sectional study on the knowledge and practice of travel vaccination and malaria prophylaxis for international travel among resident doctors of Ahmedabad city, Gujarat

Dhaval V Parekh, Utkarsh Khare, Pooja Soni, M K Lala

Department of Community Medicine, B.J. Medical College, Ahmedabad, Gujarat, India

Correspondence to: Dhaval V Parekh, E-mail: dhavalparekh32@gmail.com

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## ABSTRACT

**Background:** Travelers play a significant role in the spread of infectious diseases across international borders, through their travel patterns and behaviors. Travel may be the only risk factor for infectious diseases that are well controlled in the travelers' country of residence, particularly vaccine-preventable diseases. **Objectives:** The aim of this study is to assess the knowledge and practice of travel vaccination and malaria prophylaxis among resident doctors of BJ Medical College and Civil Hospital, Ahmedabad. **Materials and Methods:** This was a cross-sectional study conducted at Civil Hospital and BJ Medical College, Ahmedabad. The study was conducted from July 2017 to October 2017. A pilot study was conducted among 20 resident doctors, and the prevalence of knowledge of travel vaccination was found to be 65%. Using the formula  $4pq/L^2$ , data were collected from 100 resident doctors. Data were collected using a semi-structured questionnaire, and data analysis was performed using Microsoft Excel 2013 and EpiInfo 7. For statistical analysis, Chi-square test was applied. Ethical consent was taken from all respondents. **Results:** 86% of the resident doctors were having knowledge about travel vaccination, and 79% were knowing about the requirement of malaria prophylaxis given to travelers. The travel vaccine knowledge was 100% among the persons above 30 years of age, and it was 86% in the younger age group (20–25 years). Country-wise knowledge about travel vaccination was more for developing countries than developed countries. Only 8.3% gave the history of taking immunization for international travel. Reasons for not taking immunization were not required for country of travel followed by non-awareness. **Conclusion:** The knowledge of travel vaccine and malaria prophylaxis was more among the 30+ age group followed by 20–25 age groups, and the knowledge of both was more among males. The practice of travel vaccination was found to be poor.


**KEY WORDS:** Travel Vaccination; Malaria Prophylaxis; Resident Doctors

## INTRODUCTION

Travelers often play an important role in the spread of infectious diseases across borders, through their travel

plans, behaviors, and patterns. Traveling might be the only risk factor for the transmission of infectious diseases that are well controlled in a certain country, especially vaccine-preventable diseases. The role of vaccination among travelers is a significant component for the prevention of travel associated infectious diseases.<sup>[1,2]</sup>

Health risks associated with travel need to be balanced against the positive opportunities offered by inter-regional and cross-border travel.<sup>[3]</sup> The main goal of travel health and associated fields is to protect travelers from disease, accidents, and death. International travel has seen a dramatic rise during

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recent times, and there has been an increase in diseases and associated public health problems. Each year, around 80 million travelers from developed countries visit developing countries where the epidemiological and sanitary conditions are different from their country of residence.<sup>[4]</sup> Thus, travelers increase the risk of exposure to travel associated health problems which include infectious diseases that may be imported back to their home country.<sup>[5]</sup>

Immunizations taken before traveling contribute to the risk reduction of specific diseases for the traveler as well as the reduction in risk of international spread of diseases. Agent, host, and environmental factors determine the risk of acquiring a disease when traveling. Most significant factors are the place that has to be visited, travel duration, and reason for travel. Among host factors, the traveler's health and his/her behavior overseas have to be considered. As a result, an agent–host–environment-based assessment of the travel plan should be done when considering which immunizations are to be taken by the traveler.<sup>[6]</sup>

India has become a popular destination for tourists in South Asia. Recent economic opportunities have resulted in a remarkable increase of business-related travel. People traveling to India can be broadly divided into the business traveler, the young economical backpacker, the medical volunteer, the holiday tourist, and the immigrant or non-resident Indian visiting family and friends. Medical graduates in India are showing interest in international travel to different countries for higher specialist courses, career growth, and better opportunities. People traveling to India are at an intermediate risk for malaria, and recent reports in the rise of chloroquine-resistant *Plasmodium falciparum* malaria in various parts of India are causing a rise in concern. Furthermore, different international travel advisory bodies vary on their opinion for malaria prophylactic regimens to be followed when traveling to India.<sup>[7-9]</sup>

Improvement in the knowledge and health education of disease transmission among travelers, following recommendations on sanitation, food, and water hygiene, avoiding arthropod bites with physical barrier methods and insect repellents, chemical prophylaxis against malaria, and taking required vaccinations are all known to reduce the risk of travel-associated diseases.<sup>[10]</sup> Since a considerable amount of travelers are at risk for having a travel-related illness or injury during their outings, there is a need for travelers to seek suitable pre-travel health education and immunizations to reduce the risk of any ailment while away from their country of residence.<sup>[11]</sup>

## Objectives

The objective of this study is to assess the knowledge and practice of travel vaccination and malaria prophylaxis among

resident doctors of BJ Medical College and Civil Hospital, Ahmedabad.

## MATERIALS AND METHODS

A cross-sectional study was conducted at BJ Medical College and Civil Hospital, Ahmedabad. The study was conducted from July 2017 to October 2017.

A pilot study was conducted among 20 resident doctors, and the prevalence of knowledge of travel vaccination was found to be 65%. Using the formula  $4pq/L^2$ , data were collected from 100 resident doctors of Civil Hospital and BJ Medical College, Ahmedabad.

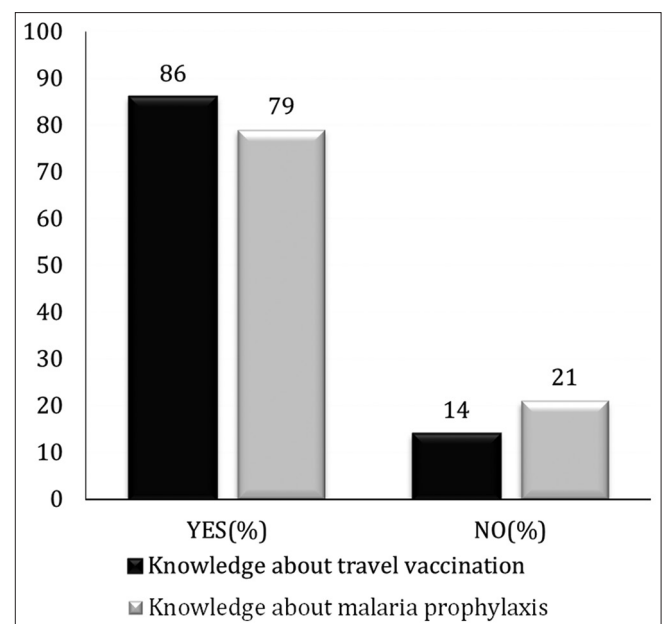
Data were collected using a semi-structured questionnaire, and data analysis was performed with Microsoft Excel 2013 and Epi Info 7. For statistical analysis, Chi-square test was applied. Ethical consent was taken from all respondents.

## RESULTS

Figure 1 shows that 86% of the respondents had knowledge about travel vaccination while 79% of the respondents had knowledge about malaria prophylaxis.

As per the practice of travel vaccination, of the 24% who traveled, only 2 (8.3%) gave the history of taking immunization. Reasons for not taking immunization were not required for country of travel followed by non-awareness.

Table 1 shows that knowledge about travel vaccination was more in the 30+ age group (100.0%) followed by



**Figure 1:** Overall knowledge about travel vaccination and malaria prophylaxis

**Table 1:** Relation of knowledge about travel vaccination with sociodemographic variables

Parameters	Respondents			P value
	Total	Having knowledge n (%)	Not having knowledge n (%)	
Age Group				
20–25	51	44 (86.3)	7 (13.7)	P=0.76
26–30	41	34 (82.9)	7 (17.1)	
30+	8	8 (100.0)	0 (0)	
Sex				
Male	51	46 (90.2)	5 (9.8)	P=0.34
Female	49	40 (81.6)	9 (18.4)	
Marital status				
Unmarried	72	61 (84.7)	11 (15.3)	P=0.79
Married	28	25 (89.3)	3 (10.7)	
Qualification				
1 <sup>st</sup> -year resident	49	42 (85.7)	7 (14.3)	P=0.99
2 <sup>nd</sup> -year resident	25	21 (84.0)	4 (16.0)	
3 <sup>rd</sup> -year resident	26	23 (88.5)	3 (11.5)	

**Table 2:** Relation of knowledge about malaria prophylaxis with sociodemographic variables

Parameters	Respondents			P value
	Total	Having knowledge n (%)	Not having knowledge n (%)	
Age group				
20–25	51	44 (86.3)	7 (13.7)	P=0.18
26–30	41	28 (68.3)	13 (31.7)	
30+	8	7 (87.5)	1 (12.5)	
Sex				
Male	51	43 (84.3)	8 (15.7)	P=0.18
Female	49	36 (73.5)	13 (26.5)	
Marital status				
Unmarried	72	57 (79.2)	15 (20.8)	P=0.95
Married	28	22 (78.6)	6 (21.4)	
Qualification				
1 <sup>st</sup> -year resident	49	40 (81.6)	9 (18.4)	P=0.47
2 <sup>nd</sup> -year resident	25	17 (68.0)	8 (32.0)	
3 <sup>rd</sup> -year resident	26	22 (84.6)	4 (15.4)	

the 20–25 years age group (86.3%) while those in the 26–30 years age group (82.9%) had the least knowledge. Knowledge was more in males (90.2%) compared to females (81.6%). Married respondents showed more knowledge (89.3%) compared to single respondents (84.7%). Knowledge about travel vaccination was highest among 3<sup>rd</sup>-year resident doctors (88.5%), followed by 1<sup>st</sup>-year residents (85.7%) and then 2<sup>nd</sup>-year Residents (84.0%).

**Table 3:** Country-wise knowledge about travel vaccination was more for developing countries than developed countries

Region	Percentage
USA	6
Europe	5
Australia	16
Africa	49
Southeast Asia	18
Arabian countries	13

However, no statistical significance was found between the sociodemographic variables with knowledge about travel vaccination ( $P > 0.05$ ).

Table 2 shows that knowledge about malaria prophylaxis was more in the 30+ age group (87.5%) followed by the 20–25 years age group (86.3%) while those in the 26–30 years age group (68.3%) had the least knowledge. Knowledge was more in males (84.3%) compared to females (73.5%). Single respondents showed more knowledge (79.2%) compared to married respondents (78.6%). Knowledge about travel vaccination was highest among 3<sup>rd</sup>-year resident doctors (84.6%), followed by 1<sup>st</sup>-year residents (81.6%) and then 2<sup>nd</sup>-year residents (68.0%). However, no statistical significance was found between the sociodemographic variables with knowledge about malaria prophylaxis ( $P > 0.05$ ).

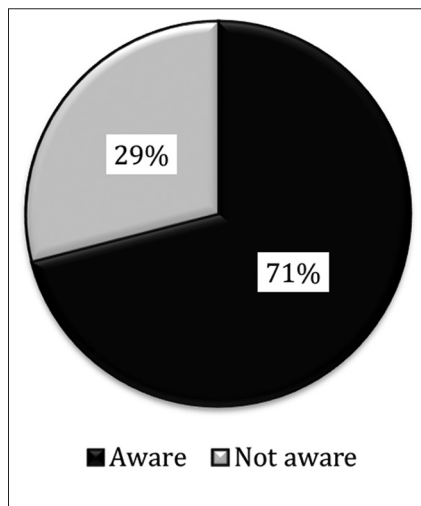
Table 3 shows that country-wise knowledge about travel vaccination was more for developing countries compared to developed countries with that for Africa being the highest (49%) and that of Europe being the least (5%).

Figure 2 shows that 71% of the respondents were aware about the malaria chemoprophylaxis drug regimen compared to 29% which were unaware.

## DISCUSSION

In our study, 86% of the respondents had knowledge about travel vaccination while 79% of the respondents had knowledge about malaria prophylaxis. In a similar study conducted in Nigeria, the knowledge about travel vaccination was found to be 96.3%.<sup>[1]</sup>

Most respondents were between 20 and 25 years of age, while in other similar studies conducted in Nigeria, Qatar, and America, majority of the respondents were of a higher age.<sup>[1,5,12]</sup> This study has an almost equal proportion of male and female respondents which is similar to an American study.<sup>[12]</sup> On the other hand, the number of male respondents were predominant in studies conducted in Nigeria and Australia, while the number of females were more in a Qatar



**Figure 2:** Awareness about malaria chemoprophylaxis drug regimen

study.<sup>[1,5,13]</sup> Most of the respondents were single which was contrary to a study conducted in Nigeria where most of the respondents were married.<sup>[1]</sup>

The practice of travel vaccination in this study was found to be very low which was similar to the findings of an Australian and Bangkok study but different from Greek and Nigerian studies where the practice of travel vaccination was found to be high.<sup>[1,2,13,14]</sup> Reasons of low practice in this study were not required for country of vaccination followed by non-awareness, while in other studies, the reasons were paucity of information on travel vaccination, distressing protocols and requirement for the vaccination, cost of vaccination as well as poor monitoring system for ensuring travel vaccination at the entry and exit points of the countries, unaware of being at risk, low knowledge of vaccination being important for traveling, cost of the vaccination, and side effects.<sup>[1,10,14]</sup>

The knowledge about travel vaccination and malaria prophylaxis was found to be good in this study which was similar to the results of other studies.<sup>[1,5,10,12-15]</sup>

### Strength

The relation of sociodemographic variables with knowledge about travel vaccination and malaria prophylaxis is compared which has not been done in similar studies.

### Limitation

The relation between knowledge about travel vaccination and malaria prophylaxis with sociodemographic variables was found to be insignificant, so the study should be carried out by taking a larger sample.

### Recommendations

Doctors need to be updated on the latest norms of travel vaccination and malaria prophylaxis with special emphasis to be given on the importance of the practice of vaccination during international travel. This may be added to the academic curriculum because many doctors are interested in international career prospects.

### CONCLUSION

It seems that the knowledge of travel vaccine and malaria prophylaxis was more among the 30+ age group followed by 20–25 age groups, and the knowledge of both was more among males. The married doctors showed more knowledge about travel vaccines, but the knowledge of malaria prophylaxis was more among single doctors. 3<sup>rd</sup>-year residents had more knowledge about both. The above groups may be more aware as they may be contemplating foreign travel in the near future. The practice of travel vaccination was found to be poor. Overall knowledge of travel vaccination and malaria prophylaxis was good.

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