

Short Communication

Pattern, Purpose and Profile of Travelers Attending Yellow Fever Vaccination Centre in Mumbai

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ABSTRACT

Introduction: Yellow fever is an acute viral hemorrhagic disease transmitted by infected Aedes mosquitoes. India is free from Yellow Fever. Government of India has provided facility for vaccination against Yellow Fever for those who are travelling to yellow fever endemic countries. **Objective:** Present study was conducted to understand the travel purpose, pattern and socio-demographic profile of persons coming for Yellow Fever Vaccination. **Materials & Methods:** Study was conducted in Yellow Fever Vaccination (YFV) centre of APHO Mumbai. A total of 150 persons attending YFV centre of APHO Mumbai were enrolled for the study by using systematic random sampling. Study was conducted with permission of appropriate authorities and all necessary precautions were taken to protect the confidentiality and rights of study participants. **Results:** More than 80% of the study participants were travelling to Africa while 10 (6.7%) to South America, 5 (3.3%) were seafarer and 14 (9.3%) had other destinations. Majority, 58 (38.7%) were travelling for tourism purpose, 54 (36%) for work, 20 (13.3%) for business, 7 (4.7%) for attending family functions, 6 (4.0%) for higher studies and 5 (3.3%) were seafarers. Average age of travellers was 39 years (Mean \pm SD; 39 \pm 13 years) ranging from 19 to 72 years. Out of 150 study participants 108 (72%) were from Mumbai, 100 (66.7%) were educated up to graduation, more than 50% were skilled workers and median monthly income was Rs 30000 only. **Conclusion:** International travellers are at more risk of acquiring and / or transmitting infectious diseases. Major Airports & Ports having international departures and arrivals should be strengthened enough to practice Travel Medicine through Travel Health Clinics.

Key words: Travel Medicine, Travel Health Clinics, Yellow Fever Vaccination, APHO Mumbai, Points of Entry

INTRODUCTION

Yellow fever is an acute viral hemorrhagic disease transmitted by infected Aedes mosquitoes. [1,2] Yellow fever virus is an arbovirus of the flavivirus genus. [1] The "yellow" in the name refers to the jaundice that affects some patients. [1,2] Up to 50% of severely affected persons without treatment die from yellow fever. Forty seven countries

of Africa and Latin America are either endemic for or have regions that are endemic for yellow fever with a combined population of more than 900 million at risk of yellow fever. There are an estimated 200 000 cases of yellow fever, causing 30 000 deaths, worldwide each year. [1-3]

Asia is considered vulnerable for the potential introduction of the virus, due to the

presence of a large susceptible human population and presence of the mosquito vector, *Aedes aegypti*.^[4] India is free from Yellow Fever.^[5-7] The conditions for transmission of yellow fever are very conducive in India - presence of *Aedes aegypti* in abundance and a huge susceptible population. Government of India has been following a strict yellow fever vaccination programme to prevent the entry of yellow fever in India. All passengers coming to India from yellow fever endemic countries should have a valid International Vaccination Card for Yellow Fever. or they will be quarantined for a period of 6 days or till the Yellow Fever vaccination become valid (whichever is earlier). To protect its own citizen Government of India has provided facility to vaccinate those who are travelling to yellow fever endemic countries.^[3-5]

Strategy of Government of India for prevention of entry of yellow fever disease into India has been screening. All international passengers coming from Yellow Fever endemic countries are screened for vaccination against yellow fever disease. This screening is done at all points of entry (POE) in compliance of the International Health Regulations 2005 and Aircraft (Public Health) Rules 1954 and Port Health Rules 1955. As on December 2015 Dte. GHS and MOH have set up 33 Yellow Fever Vaccination Centers across the country. The vaccinations in these centers have increased and the demand for YFV has increased from 90,000 to nearly 180,000 in 2014.^[4,5]

Airport Health Organisation (APHO) Mumbai is one of the recognized centre for yellow fever vaccination and functioning since 25th July 1947. APHO Mumbai caters services to passengers usually from western region of the country. At APHO Mumbai on an average 1000 passengers are vaccinated every month and the charge for one dose of yellow fever vaccine is Rs 300/- only.^[4]

Present study was conducted to understand the travel purpose, pattern and

socio-demographic profile of Indian population who are exposed to the risk of yellow fever disease.

Objectives: Specific objectives of the study was as follows,

- To study the pattern of travel of persons attending Yellow Fever Vaccination centre in Mumbai.
- To study the purpose of travel of persons attending Yellow Fever Vaccination centre in Mumbai.
- To study the socio-demographic profile of persons attending Yellow Fever Vaccination centre in Mumbai.

MATERIALS AND METHODS

Study site: Study was conducted in Yellow Fever Vaccination centre of APHO Mumbai. Yellow Fever Vaccination centre of APHO Mumbai caters services to passengers coming from western regions of the country. Average number of person's taking Yellow Fever Vaccine at APHO Mumbai is more than 800 per month.

Sample size: Total calculated sample size was 150 persons attending Yellow Fever Vaccination centre at APHO Mumbai. Sample size was calculated by taking highest probability of reporting to Yellow Fever Vaccination centre as 50%, confidence limit of 95%, power of 80%, allowable error of 10% and noncompliance rate of 50%.

Study design and Sampling: A cross sectional descriptive study was conducted. Study participants were selected by using systematic random sampling technique. First study participant was selected randomly based on the last digit of the date of that particular day; subsequently every 5th individual was selected. If the selected individual did not execute his / her consent to participate in study next individual was included in the study.

Data collection: Data was collected by using a self administered structured questionnaire. Information was collected on Age, Sex, Education, employment status, job profile, average income per month, place of resident etc.

Data Analysis: Data was entered in Microsoft excel. Analysis was done in line with objectives. Data was presented by using rate, ratios and proportions. Chi square was used as test of significance and P value <0.05 was taken as significant.

Ethical consideration: Study was conducted after taking permission from the appropriate authority. All participants were administered an informed written consent. Information collected was anonymised. No personal information like name, mobile number or email id was collected. If any person refused to give information then the person was excluded from the study without affecting his/her eligibility for vaccination.

RESULT

Travel Pattern: Out of total 150 study participants maximum were travelling to Africa followed South America. More than 80% were travelling to destination Africa while 10 (6.7%) were travelling to destination South America. Out of total 150 study participants 5 (3.3%) were seafarer for whom the destination was not predefined. Out of 150 study participants 14 (9.3%) had destination other than which required Yellow Fever Vaccination. However they were given Yellow Fever vaccine their flight was transiting through airport located in a country which is endemic for Yellow Fever (**Table 1**).

Table 1: Travel Pattern of persons attending Yellow Fever Vaccination centre APHO Mumbai (n=150)

Travel Destination	Number	Percentage
Africa	121	80.7
South America	10	6.7
Seafarers	05	3.3
Others	14	9.3
Total	150	100

Travel Purpose: Out of total 150 study participants maximum were travelling for the purpose tourism followed work and business. Out of 150 participants 58 (38.7%) were travelling for tourism purpose, 54 (36%) were travelling for work, 20 (13.3%) were travelling for business, 7 (4.7%) for attending family functions, 6 (4.0%) for

higher studies and 5 (3.3%) were seafarers (**Table 2**).

Table 2: Travel purpose of persons attending Yellow Fever Vaccination centre APHO Mumbai (n=150)

Travel Purpose	Number	Percentage
Tourism	58	38.7
Work	54	36.0
Business	20	13.3
To attend Family Function	7	4.7
Higher Studies	6	4.0
Seafarers	5	3.3
Total	150	100

Socio-demographic profile: Out of total 150 study participants more than 70 percent were in the age group of 21 – 50 years i.e. economically productive age group. Average age of travellers was 39 years (Mean ± SD; 39 ± 13 years) ranging from 19 to 72 years. Majority of the travellers 47 (31.3%) were in the age group of 21-30 years followed by 39(26%) in the age group of 31- 40 years. Out all 150 study participants 4 (2.7%) were below 20 years and 14 (9.3%) were above 60 years of age. Majority of the travelers 119 (79.3%) were male while 31 (20.7%) were female (**Table 3**).

Out of 150 study participants 100 (66.7%) were educated up to graduation and above followed by secondary (21.3%), higher secondary (10%). Majority of the study participants were skilled workers (58.7%) and professionals (21.3%) by occupation followed by businessmen (13.3%) and unskilled workers (4%). Out of 150 study participants 4 (2.7%) were retired or unemployed (**Table 3**).

Out of 150 study participants 134 (89.3%) were employed and had monthly income. Out of 16 study participants not having any source of income, 11 were house wives, 3 were students and 2 were unemployed. Median income was Rs 30000/- per month. It was reported that per month income ranges from Rs 7000/- to 250000 only. Majority (35.4%) of the travellers was in the income group ranging from Rs 10000 to 30000 only (**Table 3**).

Out of total 150 study participants 108 (72%) were from Mumbai, 31 (20.7%) were from state other than Maharashtra and 11

(7.3%) were from Maharashtra state but district other than Mumbai. This pattern was consistent with annual record of yellow

fever vaccination centre APHO Mumbai (p=0.08) (Figure 1).

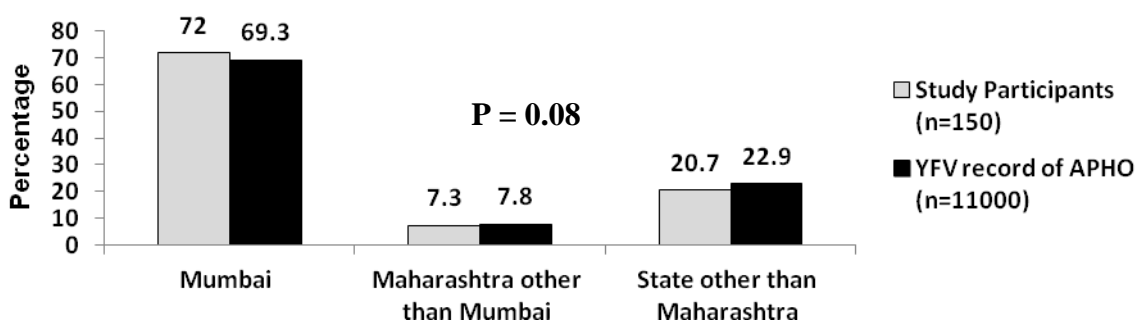


Figure 1: Place of Residence of travellers coming for Yellow Fever Vaccination

Table 3: Socio-demographic profile of persons attending Yellow Fever Vaccination centre APHO Mumbai (n=150)

Profile		Number	Percentage
Age in completed years	≤20	4	2.7
	21 - 30	47	31.3
	31 - 40	39	26.0
	41 - 50	27	18.0
	51 - 60	19	12.7
	≥61	14	9.3
Sex	Female	31	20.7
	Male	119	79.3
Education	Primary	3	2.0
	Secondary	32	21.3
	Higher Secondary	15	10.0
	Graduation and Above	100	66.7
Occupation	Unskilled worker	6	4
	Skilled worker	88	58.7
	Professional	32	21.3
	Business	20	13.3
	Retired & Unemployed	4	2.7
Income (Rs per month)	No income	16	10.7
	<10000	3	2.0
	10000 - 30000	53	35.4
	30000 - 50000	26	17.3
	50000 - 100000	26	17.3
	>100000	26	17.3
Place of Residence	Mumbai	108	72
	Maharashtra other than Mumbai	11	7.3
	State other than Maharashtra	31	20.7

Age (Mean ± SD) = 39 ± 13 years, Median Income = Rs 30000

DISCUSSION

Out of all study participants it was found that maximum were travelling to Africa followed by South America and few were seafarers. It was also found that few travellers who were not going to yellow fever endemic countries but has flights via airport situated in endemic countries also had come for Yellow Fever Vaccination. Majority of the persons were travelling for Tourism followed by work and business. A fraction of people has reported the purpose of travel as ‘to attend family function’.

Majority of the persons travelling to Yellow Fever Disease endemic countries were from economically productive age group and so a national asset. Majority of them were unskilled and skilled workers followed by businessmen. Almost all the travellers were found to be educated and majority of them were educated up to graduation and above. These travellers are economically and biologically vulnerable and are at more risk of acquiring and / or transmitting infectious diseases.

Travellers going to Africa and South America are at risk of infectious diseases like Malaria, Dengue, Typhoid, Cholera, Yellow Fever, STIs & HIV and Diarrheal Diseases etc. [8-10] International travelers can experience travel-related morbidity during and after travel. Travelers can contribute to the global spread of infectious diseases, including novel and emerging pathogens. [3, 11] Vaccination status of Indians, travelling to Africa and Latin American countries is not known. So these travelers are at risk of acquiring infectious diseases prevalent in destination countries.

Description and evaluation of the patterns of disease among persons traveling internationally can provide information that might help prevent, treat, and control disease among international travelers and help prevent the global spread of pathogens. [11, 12] The timely detection of diseases in this population can alert the public health and medical communities to disease outbreaks before they spread to or become apparent in the general population. [11-13]

A few well informed travelers explore, obtain and use guidelines and interventions from private hospitals. In the Government sector there is no health package regarding travel related health hazards. So the concept of creation of a travel health clinic in major international airport is a pertinent issue.

CONCLUSION

To mitigate this risk, health-care providers should provide evidence-based advice to travelers before travel, as well as destination-specific medical evaluation to ill travelers after travel. All these preventive measures such as awareness and vaccination can be provided through Travel Health Clinics.

Recommendations: Major Airports & Ports having international departures and arrivals should be strengthened enough to practice Travel Medicine through Travel Health Clinics.

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