

# Out of Pocket Expenditure for Yellow Fever Vaccination - An Experience from a New Established Yellow Fever Vaccination Centre at Thoothukudi, Tamil Nadu

Achhelal Pasi<sup>1</sup>, Amitabha Dan<sup>2</sup>, Pragati Gaikwad<sup>3</sup>, Poornima P<sup>4</sup>,  
Sujeet Kumar Singh<sup>5</sup>

<sup>1</sup>Public Health Specialist, Airport Health Organisation, Mumbai

<sup>2</sup>Field Epidemiologist, All India Institute of Hygiene & Public Health, Kolkata

<sup>3</sup>Medical Officer, Airport Health Organisation, Mumbai

<sup>4</sup>Port Health Officer, Port Health Organisation – Tuticorin

<sup>5</sup>Director, National Centre for Disease Control, New Delhi

Corresponding Author: Amitabha Dan

## ABSTRACT

**Background:** Present study was conducted to study the out of pocket expenditure incurred by the passengers to take yellow fever vaccine in the newly established Yellow fever vaccination centre at Thoothukodi Port Health Organisation.

**Objectives:** To study the (i) average expenditure incurred by persons to take the Yellow Fever Vaccine and (ii) association between out of pocket expenditure and the geographic distance from the vaccination centre.

**Material and Methods:** It was a cross sectional exploratory study conducted in PHO Tuticorin involving 144 study participants selected by using universal sampling technique. Data was collected by using pretested structured self administered questionnaire over a period of 1 month. Data analysis was done in line with study objectives and variables were presented in percentage, mean and standard deviation Students 't' test was used as test of significance and 'p' value <0.05 was considered as significant. Data was collected after taking permission from the appropriate authorities and willingness of the study participants.

**Results:** Out of 144 persons, 84 (58.3%) came from Thoothukodi district 137 (95.14%) were male and average age of the study participants was 31.15 years. Average expenditure incurred for taking vaccination for persons coming from Thoothukodi was Rs 489.2/- with standard deviation of Rs 408/- only. Average expenditure incurred for taking vaccination for persons coming from out of Thoothukodi district was Rs 820.9/- with standard deviation of Rs 406/- only. The difference in expenditure incurred was statistically significant (p=0.001).

**Conclusion and Recommendations:** The new vaccination centre was successful in reducing the out of pocket expenditure and time of the intending travelers from this part of the state. More Yellow Fever vaccination centers need to be established at strategic locations.

**Key words:** Out of Pocket Expenditure, Port Health Organisation, Tuticorin, Yellow Fever Vaccine, Tamilnadu, Thoothukodi

## INTRODUCTION

Yellow fever is an acute viral haemorrhagic disease transmitted by

infected mosquitoes. The "yellow" in the name refers to the jaundice that affects some patients. The virus is endemic in tropical

areas of Africa and Central and South America. Yellow fever is prevented by an extremely effective vaccine, which is safe and affordable. A single dose of yellow fever vaccine is sufficient to confer sustained immunity and life-long protection against yellow fever disease. A booster dose of the vaccine is not needed. The vaccine provides effective immunity within 10 days for 80-100% of people vaccinated, and within 30 days for more than 99% of people vaccinated. It is given either by injection into a muscle or just under the skin.<sup>[1-2]</sup>

Yellow fever is the only disease specified in the International Health Regulations - 2005 (IHR -2005) for which countries may require proof of vaccination from travellers as a condition of entry under certain circumstances and may take certain measures if an arriving traveler is not in possession of such a certificate.<sup>[3]</sup>

V. O. Chidambaranar Port Trust, formerly Tuticorin Port Trust,<sup>[4]</sup> is one of the 12 major ports in India. It was declared to be a major port on 11 July 1974. It is second-largest port in Tamil Nadu and fourth-largest container terminal in India.<sup>[5]</sup>

A 'Yellow fever Vaccination facility' was established on Jun17, 2016 by Ministry of Health & Family Welfare, Government of India.<sup>[6]</sup>

Thoothukodi was the 35th centre in the country to provide Yellow fever Vaccination facility and would pave way to save money and time to the intending travellers from this part of the state.<sup>[6-8]</sup>

Persons attending yellow fever vaccination are of mixed groups as students, unskilled workers, professionals and business persons. Though the direct cost of yellow fever vaccination is Rs 300/ (Three Hundred) only as fixed by Govt of India the actual expenditure for taking the vaccine is much more. Most of the passengers need to travel out of city and or state to take the injection.<sup>[7]</sup>

Present study was conducted to study the out of pocket expenditure incurred by the passengers to take yellow fever vaccine in the newly established Yellow fever

vaccination centre at Thoothukodi Port Health Organisation.

## **OBJECTIVE**

- To study the socio-demographic profile of persons taking yellow fever vaccination
- To study the average expenditure incurred by persons to take the Yellow Fever Vaccine
- To study the association between out of pocket expenditure and the geographic distance from the vaccination centre.

## **MATERIALS AND METHODS**

Study was conducted at newly established Yellow fever vaccination centre of PHO Tuticorin. It was a cross sectional exploratory study. Study participants were passengers coming for taking Yellow Fever Vaccine. Data was collected by using pretested structured self administered questionnaire. Data was collected over a period of 1 month. A total of 144 study participants were selected by using universal sampling technique. All the persons vaccinated during the period from 22.11.16 to 21.12.16 were included in the study. Data about the Yellow Fever Vaccination centre and record keeping was collected from Port Health Officer of Thoothukodi and other health personnel by using a semi-structured questionnaire.

Data was collected after taking permission from the appropriate authorities and willingness of the study participants.

Data analysis was done in line with study objectives by using Micro Soft Excel 2010. Qualitative variables were presented by using Rate, Ratio and Proportions while Quantitative variables were presented by using Mean, Median and Standard Deviation. Student 't' test was used as test of significance and 'p' value <0.05 was considered as significant. Data was collected after taking permission from the appropriate authorities and willingness of the study participants.

**Operational Definition:** Out of pocket expenditure was defined as “the sum of total expenditure incurred by a traveler for taking yellow fever vaccine and It includes cost of the vaccine, cost of travel to reach to yellow fever vaccination centre, Food, lodging – boarding and loss of wages for the day”.

## RESULT

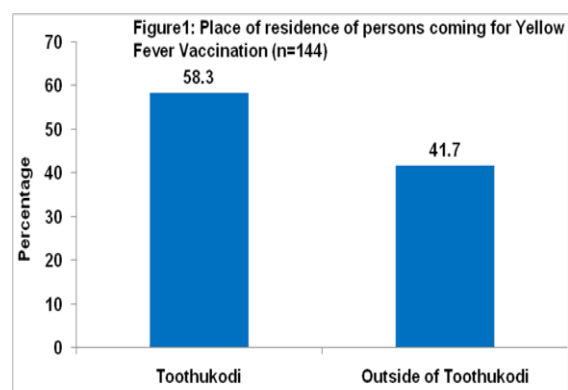
Out of total 144 study participants 137 (95.14%) were male and only 7 (04.86%) were females. Average of the study participants was 31.15 years with Standard Deviation of 9.9 years. Minimum age was 18years and maximum age was 76 years. Maximum numbers of study participants were in the age group of 21-60 years. More than 60% of the study participants were educated up to 12<sup>th</sup>

Standard. Out of 144 study participants, 82 (56.9%) were Christians, 52(36.1%) were Hindus and 10(6.9%) were Muslims. Out of 144 study participants 32 were not working persons and had no income while 112 had some income. Average monthly income was Rs 83,026/- only. Monthly Income ranges from Rs 5000 to Rs 200,000. None of the 144 passengers did night stay at Thoothukodi and all of them travelled to the vaccination centre by road. More than three fourth of the passengers 121(84.03%) did not incur any loss of wages. Only 23(15.97%) incurred loss of wages ranging from Rs 200 to Rs1000/- only. Out of 144 study participants majority were seamen 59 (40.97%), followed by Servicemen 46 (31.94%), unemployed 32 (22.1%, businessmen 6 (4.1%) and student 1(0.7%) (**Table 1**).

**Table 1: Socio-demographic profile of persons coming for yellow fever vaccination (n=144)**

Socio – Demographic Profile		Number	Percentage
Age in completed Years	≤20	14	9.72
	21 to 60	128	88.8
	>60	02	1.39
Sex	Male	137	95.14
	Female	07	4.86
Religion	Christian	82	56.9
	Hindu	52	36.1
	Muslim	10	6.9
Education	Up to Class XII	89	61.8
	>Class XII	55	38.2
Occupation	Seamen	59	40.97
	Service	46	31.94
	Unemployed	32	22.1
	Business	06	4.1
	Student	01	0.7
Monthly Income in Rs	Nil	32	22.2
	Up to 25000	45	31.3
	25001 to 50000	22	15.3
	>50000	45	31.3
Mode of travel to the vaccine centre	Road	144	100
Loss of Daily wages	From 200 to 1000	23	15.97
	No loss of wages	121	84.03

Out of 144 persons, 84 (58.3%) came from Thoothukodi district and 60 (41.7%) from outside of Thoothukodi district. Out of 60 persons who came from outside Thoothukodi, majority came from in and around district Tirunelveli and few came from places like Chennai (6.67%), Coimbatore (3.33%), and Vellore (1.67%)



**Figure 1**

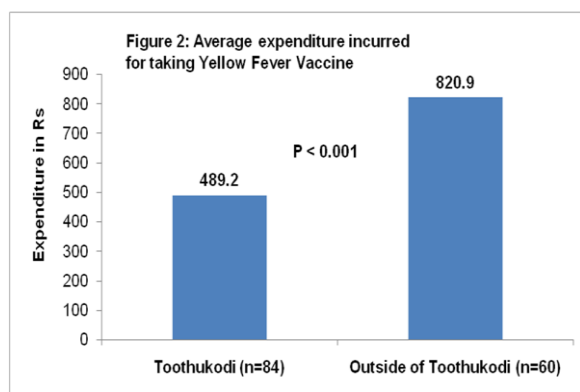


Figure 2

Average expenditure incurred by study participants to take Yellow Fever Vaccine was Rs 627.29/- only and it ranges from Rs 310 to Rs 3669/- only. Out of 144 study participants, 84 (58.4%) incurred expenditure between Rs 300 to Rs 500/-; 38

(26.3%) incurred expenditure between Rs 500 to Rs 1000/- and 22 (15.3%) incurred expenditure more than Rs 1000/- only. Average expenditure incurred on travelling to reach to vaccination centre was Rs 233.5/- only, ranging from Rs 10 to Rs 2000/- only (Table 2). Average expenditure incurred for taking vaccination for persons coming from Toothukodi was Rs 489.2/- with standard deviation of Rs 408/- only. Average expenditure incurred for taking vaccination for persons coming from out of Toothukodi district was Rs 820.9/- with standard deviation of Rs 406/- only. The difference in expenditure incurred was statistically significant ( $p=0.001$ ).

Table 2: Out of pocket expenditure of persons coming for yellow fever vaccination (n=144)

Vaccination centre in Thoothukodi Port	
Expenditure Head	Expenditure in Rs Mean (Range)
Travel to reach the vaccination centre	233.5(10-2000)
Food	25.11(0-300)
Lodging & Boarding	0.00
Loss of salary or wages	68.68 (0-1000)
Vaccination charge	300
Total Expenses	627.29 (310-3668.68)

## DISCUSSION

To travel in 43 countries of Africa and South America a valid yellow fever vaccination certificate is needed as per IHR 2005.<sup>[3]</sup> Availability, Accessibility and affordability are important principles of Human right based approach for high quality and sustainable health care services. Yellow fever vaccination centers are very much scattered throughout India. It is nearly 2.63 per 100 million populations in south zone. Yellow fever vaccination centers varies from zero to six per state.<sup>[7]</sup>

All the centres for yellow fever vaccination are concentrated in large metropolitan service area or big cities .In India the distribution Yellow fever vaccination is very much scattered with density of 3.08 centres per 100 million population.<sup>[7]</sup> There are 49 yellow fever vaccination centre in India. In the state of Tamilnadu there are only three centres located at Chennai.<sup>[9]</sup>

A passenger had to travel nearly 700 km from the southern districts of Tamilnadu,

Kanyakumari, Tirunelveli, Thoothukodi to go to Chennai for getting Yellow Fever Vaccine. This used to cause a lot of expenditure and inconvenience to the passengers. Expenditure drastically increases as geographic distance of the travelers increases from the vaccination center.

Study published from APHO Mumbai reported average expenditure incurred by persons to take Yellow Fever Vaccine was Rs 2250/- only. In present study it was found that the average out of pocket expenditure was around Rs 627/- only. This reduction in out of pocket expenditure may be due the fact that the vaccination centre was near to the beneficiaries.

Moreover there was a huge felt need for establishment of a Yellow Fever vaccination centre as evidenced by majority of the passengers were from Thoothukodi or nearby districts.

## CONCLUSION AND RECOMMENDATIONS

This new vaccination centre was successful in saving money and time to the intending travelers from this part of the state. Government of India had taken justified decision in establishing this peripheral yellow fever vaccination center. More Yellow Fever vaccination centers need to be established at strategic locations.

## ACKNOWLEDGEMENT

We are thankful to Director General of Health Services (MOH&FW), Deputy Director General of Health Services (MH&IH) of Govt. of India

**Conflict of Interest:** Nil

**Source of Funding:** Nil

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How to cite this article: Pasi A, Dan A, Gaikwad P. et al. Out of pocket expenditure for yellow fever vaccination - an experience from a new established yellow fever vaccination centre at Thoothukudi, Tamil Nadu. Int J Health Sci Res. 2019; 9(7):19-23.

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