

Appraisal of oral polio vaccination for international travellers in a designated centre of West Bengal

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Background: Until Polio is eradicated globally, the risk of acquiring the disease especially from poliovirus importation belt remains. Though the Government of India (GOI) has laid regulations related to polio vaccination of international travellers as a part of polio end game strategy yet there are hardly any reports related to the challenges related to this. The purpose of the study was to critically appraise the ongoing oral polio vaccination program for international travellers in a designated centre of West Bengal.

Materials and methods: A descriptive cross-sectional study was conducted among 465 International travellers from May 2014 to May 2015 at Medical College, Kolkata: the designated Polio vaccination centre for international travellers in Kolkata district, West Bengal. A pre-designed pre-tested schedule was used to collect information related to socio-demographic characteristics and oral polio vaccination related travelling details. All those international travellers who came for oral polio vaccination during the study period and those who gave consent were eligible for the study. Data was expressed in terms of mean, median, standard deviation, percentage and gap etc.

Results: Mean age was 43.21 ± 16.31 years. 25.81% of the recipients were residents of other districts of West Bengal while 14.62% of the respondents were from other states of India. 53.39% of those who could state their date of journey (442) had adequate gap (≥ 28 days) between date of vaccination and date of journey. 10.1% of the study subjects were visiting countries other than the seven countries mentioned by GOI for which polio vaccination is mandatory.

Conclusion: There is a need to critically check and correct all the hardships related to the effective implementation of the recommendations for oral polio vaccination of international travellers, towards a vision of polio free world.

Keywords: OPV, international traveller, Oral Polio vaccination certificate, adequate gap

I. Introduction

The South-East Asia Region of World Health Organization (WHO), comprising of 11 countries including India was certified polio free on 27th March 2014 by an independent commission under the WHO certification process. This is the fourth of six WHO Regions to be certified, marking an important step towards global polio eradication.¹ The last confirmed case of wild polio from India (Howrah district, West Bengal) was reported on 13th January 2011.² However, polio continues to circulate in Afghanistan, Pakistan and Nigeria. There have also been outbreaks following importation in Ethiopia, Kenya, Somalia and Syria. India faces the risk of importation of polio virus from such countries that have ongoing transmission. Since the year 2000, more than 45 countries that were earlier polio-free had wild polio virus importation. In order to maintain the polio free status and to mitigate the risk of importation of polio virus in India, the Ministry of Health & Family Welfare, Government of India (GOI) had made mandatory the requirement of one dose of oral polio vaccine (OPV) for international travellers between India and polio endemic countries (Afghanistan, Nigeria, Pakistan) as well as between India and countries with polio virus circulation following importation (Ethiopia, Kenya, Somalia, Syria) irrespective of their age, sex and previous immunization status, effective from 1st March 2014.^{3,4} The list of polio infected countries may be amended from time to time.³

This additional oral polio vaccination certificate is required for Indian citizens who are going to above mentioned countries or the citizens of those countries who are travelling from those countries to India when applying for visa. Passengers in transit through polio infected countries do not need additional OPV dose. But to be effective, this additional dose should be taken at least four weeks prior to departure and is valid for one year from the date of certification. All District Immunization Officers (DIO) or a concerned officer in a vaccination centre designated by DIO can issue this certificate on a standard format.³

Though WHO issued specific international health regulations (IHR) ‘temporary recommendations’ for international travellers to or from polio infected countries as a part of the process for preventing international spread of wild polio virus: *a public health emergency of international concern* under the IHR⁵ yet, there were hardly any steps taken to monitor and ensure the efficient running of the program. WHO also updated the list of polio infected countries.⁶ There are hardly any reports related to the appraisal of ongoing oral polio vaccination of international travellers in existing literature.

Whether the minimum interval between vaccination and travelling is maintained or not, whether there is wastage of vaccine due to unnecessary vaccination of international travellers going to countries other than the countries as mentioned above and whether travellers are aware of the fact that every district has a designated centre for giving the additional OPV dose for travellers—these enquiries are crucial for smooth running of the activities to prevent importation of polio virus and maintain the polio free status of India. With this background the present study was carried out with an aim to critically appraise the ongoing oral polio vaccination program for international travellers in a designated centre of West Bengal. The specific objectives were to find out the gap between oral polio vaccination and travel, to determine the countries of visit of the international travellers coming for OPV vaccination in a designated centre of West Bengal, and to compare the oral polio vaccination related travelling details with the recommended government guidelines.

II. Materials and methods

An Institution based observational descriptive cross-sectional study was conducted for 13 months from May, 2014 to May, 2015 in Medical College, Kolkata. All those international travellers who came for oral polio vaccination during the study period & gave consent were included in the study. During this study period 465 international travellers attended Medical College Centre for oral polio vaccination. All of them were interviewed using a pre designed pre tested semi structured interview schedule. They were enquired about their age, gender, religion, place of residence, date of international journey, country they will visit, date of return, date of vaccination and purpose of journey etc. Study tool also included OPV certificate. Validation of the schedule was done by 1st and 2nd authors. Ethical clearance was obtained from institutional ethics committee. At the end of the interview, the respondents were satisfactorily addressed about their queries regarding oral polio vaccination for international travel.

Data were tabulated in MS-Excel & descriptive statistics like number, percentage, mean, median, mode, range, standard deviation, gap between date of vaccination and date of journey etc. were calculated.

III. Results

Among the 465 travellers whose age ranged from years 1 to 86, most of them (22.2%) belonged to the age group of 31-40 years, followed by 21-30 years age group (18.5%). Mean age of respondents was 43.21 ± 16.31 years and median was 42 years. Nearly three fourth (72.5%) of the travellers were male. Most of the travellers were Hindu (88%) followed by Muslims (7.5%) and remaining (4.5%) were Sikh, Christian and Jain.

Most of the vaccine receivers were from Kolkata (59.57%). However, more than 40% of them were from outside Kolkata (25.81% from other districts of West Bengal & 14.62% from other states of India). Four neighbouring districts of Kolkata, i.e. Howrah, Hooghly, North 24 Parganas & South 24 Parganas accounted for 71.67% of the vaccine receivers from outside Kolkata in West Bengal. Bihar and Jharkhand constituted 47% of the residence of the vaccine receivers from outside West Bengal (Table 1). Travellers also came to this centre from distant states like Kerala, Delhi, Tamil Nadu and Maharashtra etc.

Twenty three international travellers could not state their date of journey. Among the remaining respondents (442) who could state their journey, only 53.39% had adequate gap between date of vaccination & date of journey i.e. 28 days which is necessary for the vaccine dose to be effective (Table 2). Mean gap between vaccination & journey was 27.71 ± 20.57 days whereas median & mode of the gap were 29 days & 30 days respectively. The range of the gap was wide with minimum gap being 0 days & maximum being 120 days. 40 out of 465 respondents could not state their date of return & one international traveller was going to reside in Kenya permanently. Duration of stay among 424 visitors in overseas ranged from 1 day to 1080 days with mean, median & mode being 107.28, 15, 10 days respectively.

10.1% of the study subjects were visiting countries other than the seven countries mentioned by WHO & GOI for which polio vaccination is mandatory (South Africa, Chile, Dubai, Burkina Faso, Ghana, Israel, Libya, Sierra Leone, Uganda, Zimbabwe etc.). Kenya was the most stated (52.41%) country of visit by the vaccine receivers; some (2.8%) of them visited multiple countries in a single trip. Among the study subjects who were travelling to Kenya, nearly 55.8% were travelling for recreational purpose or family visit. Syria was the least visited country with only one visitor, who did not state his purpose of visit. (Table 3)

IV. Figures and Tables

Table 1: Distribution of International travellers according to residence (n=465)

| Residence | | Number | Percentage |
|--------------------------------|-------------------|--------|------------|
| Kolkata | | 277 | 59.57 |
| Other Districts of West Bengal | North 24 Parganas | 28 | 6.02 |
| | South 24 Parganas | 22 | 4.73 |
| | Howrah | 20 | 4.31 |
| | Hooghly | 16 | 3.44 |
| | Others | 34 | 7.31 |
| | Total | 120 | 25.81 |
| Other States of India | Jharkhand | 19 | 4.08 |
| | Bihar | 13 | 2.79 |
| | Others | 36 | 7.75 |
| | Total | 68 | 14.62 |
| Total | | 465 | 100.00 |

Table 2: Distribution of International travellers according to adequacy of gap (≥ 4 weeks) between the date of oral polio vaccination and date of journey (n=442)*

| Gap | Number | Percentage |
|------------|--------|------------|
| Inadequate | 206 | 46.61 |
| Adequate | 236 | 53.39 |
| Total | 442 | 100.00 |

*n=442 as 23 study subjects could not state their date of journey

Table 3: Distribution of International travellers according to the country of visit and purpose of visit (n=465)*

| Country of visit | Purpose of visit | | | Total |
|------------------|------------------|----------|------------|-------|
| | Personal | Official | Not stated | |
| Pakistan | 2 | 8 | 6 | 16 |
| Afghanistan | 1 | 7 | 0 | 8 |
| Syria | 0 | 0 | 1 | 1 |
| Kenya | 135 | 77 | 30 | 242 |
| Nigeria | 29 | 69 | 15 | 113 |
| Ethiopia | 7 | 22 | 14 | 43 |
| Somalia | 0 | 0 | 2 | 2 |
| Others | 8 | 28 | 11 | 47 |

*Multiple responses

V. Discussion

A descriptive cross sectional study was conducted among 465 international travellers with the purpose to critically appraise the ongoing oral polio vaccination for international travellers in a designated centre of West Bengal. Despite of extensive search authors could not find similar studies done in past regarding the appraisal of oral polio vaccination strategy for international travellers. Ministry of Health & Family Welfare, Government of India recommended a dose of OPV for travellers to or from India going to or coming from a) polio endemic countries (Afghanistan, Nigeria, Pakistan) b) countries with polio virus circulation (Ethiopia, Kenya, Somalia, Syria). But this list of countries may be amended from time to time.³ As it was effective from 2014, March, data were taken from May, 2014 from the Immunization centre, Medical College, Kolkata (designated centre for Kolkata district in West Bengal) from where travellers take the vaccine.

The certificate was given by Head of the Department (HOD) of Department of Community Medicine, Medical College, Kolkata as he was the authorized officer. The data were taken from outbound travellers from India to countries with ongoing polio transmission and not from inbound travellers as it was not possible for the centre to get that data. The criterion was that the travellers have to receive a dose of OPV at least four weeks prior to departure regardless of age & previous vaccination status.³ But in the present study, 53% of travellers got vaccine four weeks before the date of journey to above mentioned countries. The age group was between 1 to 86 years, so it may be said that all age groups were covered. Each district in India has designated at least one centre where vaccine with OPV will be provided to travellers and certificate will be issued.³ But in the present study it was seen that 40% got vaccine from this centre though they were outsiders of Kolkata. Certificate should be issued by DIO as he was designated officer for issuance of certificate to travellers but for Kolkata HOD of Department of Community Medicine was designated officer. For those seven countries the vaccination

was required and circular was sent to each designated centre³ but 10.1% not going to above countries came for OPV and vaccine was given to them from this centre.

The four weeks interval between oral polio vaccine and date of journey could not be maintained by nearly half (46.6%) of the travellers. This was probably because of lack of adequate knowledge regarding vaccine related issues like, the yellow fever vaccine and OPV may be given on the same day or any other day and does not requires four weeks interval. The travellers not knowing it gave a gap of four weeks from yellow fever vaccination to take the oral polio vaccination thus, the gap between OPV and journey was not maintained.

To combat recent resurgence of Poliomyelitis, steps were taken in western countries according to CDC guidelines, that all children should receive 4 doses of inactivated polio vaccine at ages 2, 4, and 6-18 months and 4–6 years. Children, adolescents and adults who would travel to an area where poliomyelitis cases were reported and who were not immunized or whose immunization status was not known, should be given 3 doses of inactivated polio vaccines, with 4 weeks interval from 1st and 2nd dose and at least 6 months gap between 2nd and 3rd dose. The children, adolescents and adults who completed the full polio immunization should receive a single dose of inactivated polio vaccine at least four weeks before traveling to a polio endemic area. Children who receive this additional dose as a fourth dose between ages 18 months and 4 years will still require an IPV booster dose at age ≥ 4 years.⁷

Thus, the present study reflected that correct information regarding oral polio vaccination to travellers should be communicated. Information regarding minimum gap between date of vaccination and date of journey, centre for vaccination, name of countries for which OPV is mandatory should be communicated to travellers and all stake holders.

VI. Conclusion

Oral polio vaccination to international travellers irrespective of age and vaccination status was maintained as per norm in the present setting. Despite of the government recommended guidelines for oral polio vaccination of international travellers, many other deviations were found in the present study. Nearly one fourth (25.81%) of the recipients were from other districts of West Bengal & 14.62% were from other states of India. Nearly half (46.61%) of travellers who could state their date of journey (442) had inadequate gap (< 28 days) between date of vaccination and date of journey. 10.1% of the study subjects were visiting countries other than the seven countries mentioned by GOI for which polio vaccination is mandatory.

Though the study lacked external validity yet it provides key messages regarding the loopholes in the existing oral polio vaccination program for international travellers. In order to end polio from its root globally, it is important to prevent its importation in polio free countries. Even a slight mistake can turn the hard work of millions of people towards polio eradication futile. So it is recommended to implement proper monitoring of the recommended guidelines for oral polio vaccination of international travellers along with providing correct information to travellers regarding oral polio vaccination. These simple steps can help in efficient and effective running of the program towards a vision of polio free world.

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