

## Original Research Article

# Estimation of coverage of pulse polio immunization round on 28<sup>th</sup> January 2018

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## ABSTRACT

**Background:** India accounted for more than 50% of polio cases globally. India therefore started the intensive pulse polio immunization (IPPI) in 1995. The national immunization days (NID) were on 28<sup>th</sup> January and 11<sup>th</sup> March 2018. The objectives of this study were to determine the completeness of pulse polio immunization round on 28<sup>th</sup> January 2018, to evaluate the reasons for non-compliance of the community towards the vaccination round, to assess the demographic profile amongst the unvaccinated children.

**Methods:** A cross-sectional descriptive study was conducted among 570 children of zero-five years were checked in major areas of Pune that is Katraj Zoo, Swargate, Saras baug and a school in Dhankawadi. The data was collected after the first round of PPI by viewing the ink mark on the left little finger nail of the child or by interviewing the parents. SIA monitoring chart was used to assess the completeness of immunization campaign. Statistical analysis: Microsoft Excel were used to calculate percentages.

**Results:** Out of 570, 69 (12.1%) were unvaccinated with the highest number seen in nursery that is 28 (40.6%). Amongst the unvaccinated (n=69), 40 (57.9%) were males. In the unvaccinated children (n=69), 13 (18.84%) and 56 (81.15%) belonged to age group of zero-two years and two-five years respectively. Reasons for being unvaccinated were 29(42%) parents were unaware of time and place of PPI, 21 (30.4%) were outside Pune and 19 (27.5%) were unwilling due to false beliefs.

**Conclusions:** Awareness should be increased about benefits of PPI through mass media, local leaders and teachers to enhance community participation. The authorities' in charge of the PPI should be informed regarding areas lacking significant coverage so that they can be concentrated upon during subsequent PPI rounds ultimately contributing to eradicate poliomyelitis.

**Keywords:** Awareness, Community participation, Eradication, Poliomyelitis, Pulse polio immunisation

## INTRODUCTION

Poliomyelitis, often called polio or infantile paralysis, is an infectious disease caused by the poliovirus.<sup>1</sup> The polio virus is transmitted via the faecal-oral route (e.g. contaminated water or food). Initial symptoms include

fever, fatigue, headache, vomiting, stiffness in the neck, and pain in the limbs. In some cases, it causes permanent paralysis.<sup>2</sup> Vaccination is the most effective method of preventing infectious diseases. Widespread immunity due to vaccination is largely responsible for the worldwide eradication of hazardous diseases such as polio.<sup>3</sup> India

accounted for more than 50% of polio cases reported globally.<sup>4</sup> Thus, India started the intensive pulse polio immunization (IPPI) since 1995 by administering polio drops to children first at the Rashtrapati Bhavan. PPI programmed is a Government drive to sustain polio eradication from the country.<sup>2</sup>

The term “pulse” describes the simultaneous, mass administration of oral polio vaccine (OPV) on National immunisation days (NID) to all children aged below five years.<sup>5</sup> The NID were on 28<sup>th</sup> January and 11<sup>th</sup> March 2018. The IPPI aims at enhancing polio coverage through an improved social mobilization plan.<sup>6</sup> However, five to six percent of children were missed in PPI round.

Therefore, house-to-house search of these children was undertaken for vaccination.<sup>7</sup> IPPI declared India polio free on 27<sup>th</sup> March 2014. However, the challenge is international importation of wild virus from countries like Afghanistan and Pakistan which had a major outbreak recently and poses a threat to polio eradication.<sup>8</sup>

There is still a lack of knowledge about the symptoms and complications of poliomyelitis. Resistance by the community, misconceptions regarding the vaccine, lack of awareness and ignorance of IPPI are the obstacles in polio eradication.<sup>4</sup> This study was thus conducted in four areas of Pune city to evaluate the coverage of the IPPI round and reasons for non-compliance of the community towards the vaccination.

**METHODS**

A cross-sectional descriptive study was done with the help of SIA monitoring chart was used to assess the completeness of activity after the immunization campaign. Details of unimmunized children on street sweep survey were noted. Children in the age group of zero-five years were checked for in four major public areas where transit Teams (TT) had been placed during the NID that is Katraj Zoo, Swargate, Saras baug and a school in Dhakawadi on Pune Satara road.

The data was collected after the first round of pulse polio immunization (PPI) which was on 28<sup>th</sup> January 2018. The children were examined for the indelible red ink mark on the left little finger nail after the round. Total 570 children were checked for the mark in age group of zero-five years.

The data was collected by viewing the red ink mark on the left little finger nail of the child and if the mark was absent then authors interviewed either of the parents. The study was approved by our Institutional Ethics Committee.

**Inclusion criteria**

- Children from zero-five years age

**Statistical analysis**

Data was entered into Microsoft Excel sheet and percentages were calculated.

**RESULTS**

The data was collected from four major public areas of southern Pune city that is Swargate, Katraj Zoo, Saras baug and a school in Dhankawadi. Out of the 570 children, 501 (87.9%) were vaccinated and 69 (12.1%) were unvaccinated with the highest number of unvaccinated children seen in the school that is 28 (40.6%) and highest number of vaccinated children were seen in Saras baug area that is 139 (27.7%).

**Table 1: Distribution of vaccination profile according to the area.**

Area	Vaccinated (n=501)	Unvaccinated (n=69)	Total
Swargate bus stand	115 (23.0%)	14 (20.3%)	129
Saras baug	139 (27.7%)	15 (21.7%)	154
Dynankur school	109 (21.8%)	28 (40.6%)	137
Katraj zoo	138 (27.5%)	12 (17.4%)	150
Total (n=570)	501 (87.9%)	69 (12.1%)	570

In present study, the finger mark of the children was the main inclusion criteria. In the school where the parents of the children were absent and the finger mark was also absent, it was difficult to verify the vaccination status because the teachers had no record. This explains the high percentage of unvaccinated children in the school.

On interviewing the parents of 433 children at the three major public areas, it was seen that all had heard about poliomyelitis but out of them only 342 (78.98%) knew about symptoms of poliomyelitis like paralysis of limbs and fever. Television was found to be the primary source of information about PPI among 285 (65.81%) parents of the children in the three public areas.

**Table 2: Distribution of unvaccinated children in Pune and outside Pune during the round.**

Area	Unvaccinated		Total
	Child in Pune during the round	Child outside Pune during the round	
Swargate bus stand	7 (50.0%)	7 (50.0%)	14
Saras baug	9 (60.0%)	6 (40.0%)	15
Nursery school	24 (85.7%)	4 (14.3%)	28
Katraj zoo	8 (66.7%)	4 (33.3%)	12
Total	48 (69.6%)	21 (30.4%)	69

The other sources included newspapers among 60 (13.85%) and posters/banners about PPI among 88 (20.34%) parents. Amongst the unvaccinated children (n=69), 40 (57.9%) were males and 29 (42.02%) were females. In the unvaccinated children (n=69), 13 (18.84%) belonged to age group of zero-two years and 56 (81.15%) belonged to age group of two-five years.

The highest number of unvaccinated children in the age group of zero-two years was six (3.27%) found in Sarasbaug while in the age group of two-five years was

28 (7.23%) in a nursery school in Dhankawadi area. Of the 28 unvaccinated school children, 24 (85.7%) were in Pune during round accounting for the highest group in the city during the round. The unvaccinated children in the 3 public areas were mainly outside the city during the round. Of the total 69 unvaccinated children, 29 (42.0%) were unaware of time and place of PPI, 19 (27.5%) were unwilling for vaccination and 21 (30.4%) were outside the city of Pune during the round. Amongst the unvaccinated (n=69), 60 (86.95%) were Hindus and nine (13.04%) were Muslims.

**Table 3: Reasons for non-compliance with vaccination.**

Area	Reason for non-compliance with vaccination			Total
	In Pune		Outside Pune	
	Unaware of Time and Place of PPI	Unwilling		
Swargate Bus Stand	4 (28.6%)	3 (21.4%)	7 (50.0%)	14
Saras Baug	3 (20.0%)	6 (40.0%)	6 (40.0%)	15
Nursery School	18 (64.3%)	6 (21.4%)	4 (14.3%)	28
Katraj Zoo	4 (33.3%)	4 (33.3%)	4 (33.3%)	12
Total	29 (42.0%)	19 (27.5%)	21 (30.4%)	69

## DISCUSSION

Pulse polio immunization (PPI) has been designed to supplement routine immunization to eradicate polio from India. It is a major initiative which requires community participation and cooperation from all sectors. Thus, their perception and acceptance of PPI becomes very vital for its success.

In present study sample of 570 children, 501 (87.8%) children were vaccinated in round one which was similar to the study conducted by Chudasama RK in the district of Valsad where 70% children were vaccinated at booth during all the three rounds.<sup>4</sup>

This study revealed that all the parents of the children in the three major public areas of Pune had heard about polio and PPI. But only 342 (78.98%) in our students knew about symptoms of poliomyelitis like paralysis of limbs and fever. These findings were similar to a study done by Singh et al, where 70.3% of the participants knew that polio leads to paralysis of legs.<sup>9</sup>

However, a study done by Misra et al, undertaken in a rural area showed only 56% knew about polio.<sup>10</sup>

The primary source of information about PPI in this study was mainly from the television in 285 (65.81%), newspapers among 60 (13.85%) and posters/banners in 88 (20.34%) parents of the children in the three public areas. In several other studies too, television was found to be the commonest source of information for participants, like in a study by Chincholikar SV et al, and Sengupta et

al.<sup>11,12</sup> In another study by Singh et al, major sources of information were television (32.9%) and poster or leaflets (15.9%).<sup>9</sup>

In present study the role of health workers as providers of information about PPI was not mentioned by the parents/teachers. This differed from studies done in west bengal and agra where health workers were the main source of information in about 70% participants.<sup>13,14</sup>

Reasons for people's non-participation during PPI as perceived by the participants in present study was ignorance about the programme amongst 19 (27.5%) (n=69) compared to Joseph N's study done in January 2009 in Mangalore city, Karnataka where it was 45.6% (n=146).<sup>7</sup> In a study done in Delhi and Calcutta, main reason for non-immunization was also ignorance.<sup>10,12</sup>

Authors also found out that 29 (42.02%) were unaware about PPI whereas in study by Joseph N done in January 2009 in Mangalore city, Karnataka awareness about PPI was 100%.<sup>7</sup> Authors observed that 21 (30.43%) of the unvaccinated children were outside the city during PPI on 28<sup>th</sup> January 2018 which differed from study by Joseph N where 3.8% participants were outside the city.<sup>7</sup> In another study by Manjunath et al, inconvenience (38.8%) was the commonest reasons stated.<sup>15</sup>

## CONCLUSION

Lastly, present study concludes that there are deficits in programme implementation even after many years of campaigning and provides insight on the extent to which

strengthening is needed. There is a need for mobilization of children to polio booths by increasing awareness about pulse polio immunizations and its benefits. Awareness can be generated by using mass media such as television, radio, print media like newspapers, hoardings, banners, posters etc. as primary source of information. In schools, PPI round should be conducted by actively involving the teachers as they can act as a bridge between the family of under-fives and the concerned authorities. Involvement of the local leaders and revenue officers should also be initiated to create awareness and increase community participation. In addition to this a network of health workers should be effectively trained and mobilized to eliminate the misconceptions about PPI through counselling of parents and care givers just prior to immunization rounds. The best approach should be interpersonal communication by house to house visits in households having under-fives. Also, the authorities' in charge of the PPI will be informed about the areas lacking significant coverage so that these areas can be concentrated upon during subsequent PPI rounds. All of this will further improve the acceptance of PPI in the community and foster the goal of poliomyelitis eradication from neighboring countries as soon as possible in the near future.

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