Research Article

Monitoring of Polio Supplementary Immunization activities in some selected areas of Jammu region: Lessons learnt from the field

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ABSTRACT

Background: Polio is a highly infectious disease caused by a virus. It invades the nervous system and can cause total paralysis in a matter of hours. Supplementary immunization activities (SIAs) with oral polio vaccine are the main strategy for eradicating polio. Monitoring of these activities helps in generating quality data which is used by supervisors and higher authorities for checking whether these activities are going as recommended and initiating corrective action if required. **Objectives:** The objective of present study is to monitor polio SIAs in some selected areas of Jammu. **Material and Methods:** The present study was cross-sectional in nature. External monitors were briefed about various activities to be carried out day wise as a part of monitoring. High-risk areas of Jammu like urban slums, nomadic populations, brick kilns, construction site areas, and migratory communities were selected. The monitoring activity was carried out for 4 consecutive days. Results were presented in a descriptive manner using numbers, percentages, and proportions. **Results:** In total, 72 booths were covered by external monitors. Regarding monitoring of non-migratory (settled) population, a total of 160 houses were visited by us where 247 under-five vaccinated children and 9 unvaccinated children were found. A total of 123 high-risk migratory and mobile population sites were monitored. To assess the completeness of SIA, we visited slums, brick kilns, settled population in high-risk areas, and one busy market. There we checked 125 children less than two years of age and vaccination was around 97.6%. **Conclusion:** Monitoring of polio SIAs revealed overall satisfactory results.

KEY WORDS: High-Risk Areas; Monitoring; Polio; Supplementary Immunization Activities

INTRODUCTION

Polio (poliomyelitis) is a highly infectious viral disease which mainly affects children under 5 years of age. As a result of the global effort to eradicate the disease, more than 16 million people have been saved from paralysis, as 1 in 200 infections leads to irreversible paralysis.[1] Supplementary immunization activities (SIAs) are one of the well-adopted and accepted global strategies which is playing a major role in bridging the gap toward reaching the goal of polio eradication. Global polio eradication initiative since its launch in 1988 has reduced the global incidence of polio by more than 99%, the number of countries with endemic polio have decreased from 125 to 3 and burden of cases from 3,50,000 to 22 reported cases in 2017. India has achieved a milestone by being certified as polio free on March 27, 2014.[2] The last case of polio in India was reported on January 13, 2011. Since then, the country has remained free of any case of wild poliovirus. It is an unprecedented achievement for a country, which until 2009 accounted for more than half the world's polio incidence. Success in interrupting transmission was attributed to efficient microplanning, monitoring, and accountability, switch to bivalent oral polio vaccine (bOPV) and social mobilization. Monitoring of SIA can be used to guide improvements both during SIAs and in planning for the next rounds. However, independent monitoring

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does not replace supervision.[3] Initially, during the polio eradication, coverage results were often delayed, incomplete, and considered unreliable. While countries would report results of over 95% or even over 100% and claim success, poliovirus circulation would continue. Both numerators and denominators could be inaccurate by as much as 20%, and there was little real measurement of campaigns' quality indicators and the actual problems to overcome.[4]

Missing the target population would result in a rapid accumulation of susceptible children and transmission will be easy. Thus, much emphasis is put on accurate and reliable methods of monitoring quality and taking rapid corrective action. Good quality monitoring should be able to locate unvaccinated children for follow-up and identify management and operational issues that need immediate correction. Campaign in-process monitoring can provide real-time information and opportunities for local corrections but are subjected to bias if conducted by supervisors and other persons directly involved in the campaign. Monitoring is less biased when performed by independent monitors.[4]

The present study details the experience gained during the National Immunization round for polio conducted in Jammu from January 17 to January 20, 2016. Seven external monitors were deployed from PG Department of Community Medicine, GMC, Jammu, for end process monitoring in few selected areas of Jammu. This study is an attempt to describe how monitoring of SIA was conducted before switching from trivalent OPV (tOPV) to bOPV. The knowledge generated and lessons learnt from polio eradication activities in the field are documented here.

MATERIALS AND METHODS

For monitoring of SIA, the external monitors were briefed about various activities to be carried out day wise as a part of monitoring with prior permission from the Institutional Ethics Committee, GMC, Jammu. High-risk areas of Jammu like urban slums, areas having sizable nomadic populations, brick kilns, construction site areas, and migratory communities were selected. Monitoring formats and other relevant material were being provided by SMO. The monitoring activity was carried out for 4 consecutive days. On day 1, booths were monitored. On day 2, house-to-house survey was done while day 3 was dedicated for monitoring of high-risk migratory and mobile populations, and transit sites were covered on day 4.

Day 1 Booth Day Activity Monitoring

Standardized methodology given by the WHO for monitoring was followed.[5] One format was used for monitoring 5 booths and extra sheet was being used for extra booths monitored. Booth was monitored for appropriateness of booth location, type of vaccine being used, display of IEC material, training status of vaccinators, vaccinator replacements if any, and participation of ASHA workers and Anganwadi workers. In case the monitor observed inadequacy in supply, inadequate cold chain, unsatisfactory functioning of staff, respective supervisors was informed.

Booth workers were also interviewed and parents were asked about source of information regarding Pulse polio immunization activities. Feedback shared on spot.

Day 2 Monitoring of Non-Migratory (Settled) Population

House-to-house immunization activity was assessed by monitors. A minimum of P marked or unmarked houses were planned to be visited. If a cluster of 3 or more houses were found missed, this was recorded as a missed area. Adult respondents were asked about children <5 years of age who normally stay in the house including any visitors, starting from youngest child. Any child who normally stays in the house but was not present when the vaccinators visited was noted. Finger marking on each child was checked. Detail about any newborn children was also enquired. If no unimmunized child was detected, the monitors proceeded to next area for monitoring. If an un-immunized child was found during monitoring, the monitoring team immunized the child and continued monitoring the same team area for another 10 randomly selected houses.

Day 3 Monitoring of High-Risk Migratory and Mobile Populations

Preidentified migratory population sites such as urban/peri-urban slums including industrial and agricultural labour, nomadic population settlements, brick kilns, construction sites, fishermen community settlements, and transit points were monitored on day 3. It was determined whether the site is a part of the microplan or not. If site has been covered by vaccination teams, team number and name of supervisor were recorded. and if it is missed by vaccination teams,it was recorded on the monitoring format and the supervisors were informed to ensure teams cover these areas on subsequent days. Monitors checked finger marking of children in 0–5 years of age group site and the number of missed children were recorded. In settlement with <100 household, 10–15 children and in larger settlements with >100 households at least 20–25 children were checked. Team was advised to repeat activity if >10% children are unvaccinated as evidenced by no finger making after informing supervisor and block medical officer.

Monitoring of Transit Site

Teams deployed at transit and congregation sites such as railway stations, bus stands, and markets were assessed whether these sites were a part of microplan and if adequate number of teams had been deployed at these sites and shift timings are appropriate. External monitors stayed both at entry and exit points. Vaccinators <18 years of age who had

been deployed were recorded. At least 10 children passing through each transit point discreetly were observed and a tally mark was made for each child passing though each transit point. In the next row, a tally mark was made for each child whose finger mark is checked by the transit point teams.

Day 4 End of the Round Survey to Assess SIA Completeness

This survey was conducted on day after completion of house-to-house activities. Following areas were planned for visit:

1. High-risk migratory population sites such as urban/periurban slums, nomadic population settlements, brick kilns, construction sites, or others.
2. Transient/congregation sites such as markets (haats and bazaars), bus stands, railway stations, melas, and religious congregations. All the children were checked in these houses irrespective of house marking and/or P/X Category and outside the houses. If an area was missed, it was recorded and steps were initiated to get the area covered. It was planned that at least finger marking of 20 children in 0–5 years of age group and at least 5 children in age group of 0–2 age group would be checked. Only children with polio indelible ink finger marks were considered vaccinated.

RESULTS

Booth Activity Monitoring

In total, 72 booths were covered by external monitors. All booths were using tOPV. Regarding booth accessibility, i.e., appropriateness of booth location 67 booths were accessible and 5 booths had inaccessible booth location. 69 booths had a display of IEC material while 3 had no proper IEC material displayed.

Community-level involvement was good at booths. Grass root level workers such as ASHA and Anganwadi workers were involved and working as vaccinators. Team members and community mobilizers were mobilizing children in more than half of booths [Table 1 and Figure 1].

Monitoring of House-to-House Immunization Activities

Regarding monitoring of non-migratory (settled) population, a total of 160 houses were visited by us [Table 2]. We found 247 under-five vaccinated children and 9 unvaccinated children. There were a total of 27 families where children were born after the last SIA round and maximum children were vaccinated.

External monitors could meet only 4 teams working in the area while 11 teams could not be traced. Out of 4 teams,

Table 1: Observations on vaccinators (*n*=72)

Parameters	*n* (%)
Number of trained vaccinators before round	
4	35 (48.6)
0	17 (23.6)
1	5 (6.9)
2	4 (5.6)
3	11 (72)
Number of team members not same as in microplan (replaced team members)	
0	42 (58.3)
1	10 (13.9)
2	8 (11.1)
3	5 (6.9)
4	7 (9.7)
Is ASHA worker working as a vaccinator in this booth	
Yes	67 (93.1)
No	5 (6.9)
Is Anganwadi worker working as a vaccinator in this booth	
Yes	52 (72.2)
No	20 (27.8)
Are the team members/community mobilizers/volunteers mobilizing children to the booth	
Yes	41 (56.9)
No	31 (43.1)
Booth having at least one community member	
Yes	40 (55.6)
No	32 (44.4)
Team using indelible ink marker pen for finger marking	
Yes	17 (23.6)
No	55 (76.4)
Team marking the tally sheet correctly after each child is immunized	
Yes	70 (97.2)
No	2 (2.8)
Observations on booth activities	
Do they have any vaccine with VVM in Stage 3 or 4? If yes remove and give replacement	
Yes	5 (6.9)
No	67 (93.1)
Booth ran out of vaccine at any time before arrival of external monitor	
Yes	10 (13.9)
No	62 (86.1)
Does the number of used vials tally with the number of children immunized	
No	67 (93.1)
Yes	5 (6.9)

VVM: Vaccine vial monitor

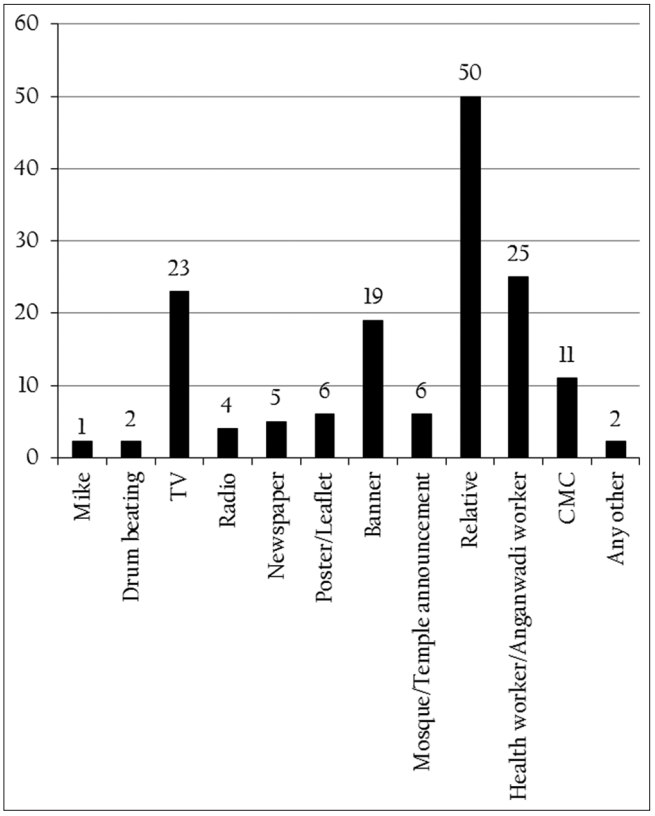

Figure 1: Source of information to parents/guardians regarding booth activities

Table 2: Assessment of completeness of house-to-house immunization activity

Number of houses visited by monitors	
Marked	128
Unmarked	32
Religion	
Hindu	88
Muslim	35
Sikh	17
Others	20
Number of children<5 years old vaccinated during this round	247
Number of children<5 years old not vaccinated during this round	9
Number of families having children born after the last SIA round	27
If yes, were the children immunized by the team during this round	25

SIA: Supplementary immunization activities

two were carrying microplan with information on routine immunization filled completely. Three teams were having trained vaccinators with them, and they were the same as mentioned in microplan. Regarding number of houses being covered by vaccinator teams, two teams covered <150 houses, while one team each covered 150–200 houses and >200 houses, respectively. We came across with one team having both vaccinators <18 years of age. ASHA workers were not involved with these teams. However, two teams had the support of Anganwadi workers during this round. Three of four teams were checking and vaccinating children found outside the house, and supervisor was cross-checking their work as well. All of them were using tOPV vaccine with vaccine vial monitor (VVM) in Stage I.

Monitoring of High-Risk Migratory and Mobile Populations

A total of 123 high-risk migratory and mobile population sites were monitored including 96 slums, 22 brick kilns, 4 construction sites, and one nomadic site was monitored as a high-risk migratory and mobile population area [Table 3]. At these sites, monitors met with 57 teams. A total of 456 children <5 years were checked and tally mark on each child checked was put. Of them, 69 children were found unvaccinated.

Monitoring of Mobile Population/Transit Sites

Monitors observed three transit sites, i.e., one railway station, one bus stand, and one bazaar. There was no major observation made at these sites. At all the three sites, adequate number of teams were deployed, shift timings were appropriate, there was no vaccinator below 18 years of age, and supervisor has cross-checked the work of these teams. Regarding vaccine used, all sites were using tOPV vaccine with Stage I VVM. A total of 30 children <5 years of age passed through these sites, and of them, 27 children were checked by transit teams for finger marking.

End of the Round Survey to assess SIA Completeness

This survey was conducted on the day after completion of house-to-house activities [Table 4]. To assess the completeness of SIA, we visited slums, brick kilns, and settled population in high-risk areas and one busy market. We checked 125 children <2 years and vaccination coverage was 97.6% among the children checked. Children between the age group of 2 and 5 years were also checked. It was observed that, out of 159 children, only 8 children were found unvaccinated. Vaccine coverage rate was nearly 96% in this group of children.

DISCUSSION

Eliminating polio from India was technically challenging task at every level. As per the WHO, the country's success was due to the ability of the program to repeatedly reach all children; the use of a new bOPV; sustained political commitment and accountability; societal support; and the availability of resources needed to complete the job. Deficiencies in credible and timely SIA data to assess risks and guide improvements were recognized as obstacles to progress.

Table 3: Monitoring of high-risk migratory and mobile population

Parameters	*n*
Total sites visited	123
Is this site a part microplan	
Yes	102
No	21
Has the team visited this site	
Yes	74
No	49
Team met	
Yes	57
No	66
Team carrying a copy of microplan with RI component	
Yes	52
No	5
If yes, information on routine immunization filled completely in microplan format	
Yes	45
No	12
Number of houses being covered by teams	
<150	45
150–199	7
≥200	5
Are the two vaccinators same as mentioned in microplan	
Both	45
One	7
None	5
ASHA worker identified in this area	
Yes	7
No	5
Not known	45
If ASHA worker is identified, is she is working in this team	
Yes	3
No	4
Is Anganwadi worker identified in the area	
Yes	6
No	3
Not known	48
If Anganwadi worker is identified, is she is working in this team	
Yes	4
No	2
Number of vaccinators trained before this round	
Both	18
One	2
None	3
NA	34
Status of VVM on vaccine being used	
Stage I	55
Stage II	2
Stage III	0
Stage IV	0
Type of vaccine being used	
mOPV1	0
mOPV2	0
tOPV	57
bOPV	0

bOPV: Bivalent oral polio vaccine, tOPV: Trivalent oral polio vaccine, MOPV: Monovalent oral polio vaccine, VVM: Vaccine vial monitor

The polio eradication and endgame strategic plan 2013–2018 calls for strengthened monitoring and accountability measures, with data that can be made available locally to supervisors and to all partners in a timely manner so that corrective action can be taken.[2]

Regarding monitoring of booth activities, overall performance was good. Availability of trained staff at booths needs more emphasis. Although they are trained beforehand, but on the vaccination day, absence of some trained vaccinators can have an impact on overall execution of SIA. More than half of booths had the same team members as mentioned in microplan, indicating efficiency in operational components of team performance. However, reasons for some of the replaced team members can be logistic issues such as conveyance and occupation in some other work. Administrative issues like non-availability of indelible ink marker pen in some of the booths need to be addressed. However, teams were instructed to use permanent ink marker pen for marking. Source of information to majority of parents regarding SIA activities were relatives followed by health workers/health centers. In considering evaluation of SIA in Nigeria, it was observed that source of information to public regarding SIA was media in 63% of cases followed by town crier and neighbors/friends.[6] Assessment of house-to-house immunization activities revealed that vaccination coverage during this SIA round was good. We could trace only nine unvaccinated under-five children, and they were vaccinated thereafter. The teams were also successful in immunizing children of 93% of families who were born after the last SIA round. The reasons for missing vaccination in both cases could be their unavailability or refusal of parents/guardians.

Monitoring of SIA in high-risk migratory and mobile populations had average results. We checked 456 under-five children to check their vaccination status in these areas, and out of them, 69 children were found unvaccinated. As 15% of children were unvaccinated among those children who were checked, we informed supervisors and SMO and teams were instructed to repeat the activity. As we all know that children in these high-risk areas are very vulnerable to

Table 4: End of round survey to assess SIA completeness

Parameters	*n*
Category of site	
Slums	13
Brick kilns	3
Non-migratory (settled population) in high-risk areas	6
Market	1
Sites part of microplan	
Yes	21
No	2
Has the team visited the area	
Yes	18
No	5
Children<2 years checked	125
Unvaccinated children<2 years found	3
Children 2–5 years checked	159
Unvaccinated children (2–5 years) found	8

SIA: Supplementary immunization activity

polio infection and missed vaccinations, urgent emphasis is needed in this regard. Missed pockets of population can be a potential threat to our eradication initiative. Evaluation studies conducted have shown that these population groups are often missed by routine immunization programs as well as in SIAs. The reasons may be many and misinformation or lack of information, involvement of parents/guardians in some other works, myths regarding Polio Immunization etc. Intensive miking, house-to-house visits by health workers to involve community leaders, panchayat members particularly the women members, religious leaders, and other local influencers like medical practitioners will help. Involvement of community-level workers such as ASHA and Anganwadi workers was less than expected. Of 123 sites visited, 102 (83%) were part of microplan, and 21 (17%) were not. Vaccinator teams visited 74 sites. Reason for the missed sites could be a shortage of vaccinators or time constraints. We could meet only 57 teams, and of them, vaccinators at 5 teams were not the same as mentioned in microplan. All vaccines vial monitors used were in Stage I except 2.

CONCLUSION

Overall results independent monitoring of SIA activities were satisfactory. More emphasis on few operational aspects is needed. We have used the information received to take corrective actions like revisiting and vaccinating the missed areas, like improving microplanning for next rounds, allocation, and selection of appropriate teams.

More qualitative research is needed to identify lacunae in entire campaign. Why some children are missed, what are the problems with field implementation and finally what corrective measures can be initiated to maintain our elimination status and reach towards eradication.

REFERENCES

1. Poliomyelitis Fact Sheet; 2018. Available from: http://www.who.int/news/Factsheet/detail. [Last accessed on 2018 May 28].
2. Polio Eradication and Endgame Strategic Plan; 2013-2018. Available from: http://www.polioeradication.org/wp-content/uploads/2016/07/PEESP_EN_A4.pdf. [Last accessed on 2018 May 28].
3. Global Guidelines for Independent Monitoring of Polio Supplementary Immunization Activities (SIA). Available from: http://www.polioeradication.org/wp-content/./IndependentMonitoringGuidelines_20101124.pdf. [Last accessed on 2018 May 28].
4. Polio Global Eradication Inititative. Best Practice for monitoring the quality of Polio Eradication Campaign Performance. Available from: http://www.polioeradication.com. [Last accessed on 2018 Jun 27].
5. Operational Guidelines for Pulse Polio Immunization In India. Available from: http://www.searo.who.int/./poliomyelitis/Operational_guidelines_for_Pulse_Polio_Immuni. [Last accessed on 2018 May 28].
6. Nigeria Expert Review Committee Presented. WHO; 2006.

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