Evidence Action

Independent Monitoring and Coverage Validation of Schools and *Anganwadis* based mass deworming program in Chhattisgarh – February 2016

REPORT

July, 2016

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1. EXECUTIVE SUMMARY

The World Health Organization (WHO) estimates that more than 1.5 billion or 24% of world's population is infected with soil-transmitted helminth (STH) infections worldwide. Over 270 million preschool-age and over 600 million school-age children live in areas of intensive worm transmission, and face physical, nutritive and cognitive impairment as a result of preventable STH infection. In 2001, WHO developed a strategy to control worm infection and recommended periodic mass deworming for all people living in endemic areas[1].

India has an estimated 220 million children living with STH infection - almost one quarter of the global burden. In order to combat the high prevalence of STH, the Government of India launched National Deworming Day (NDD) program as a part of National Health Mission in February, 2015 to deworm all children between 1-19 years of age. The program aims supervised administration of albendazole tablets to all children in preschool and school-age, in *anganwadis* and schools, including unregistered (1-5 years) and out-of-school (6-19 years) children, in *anganwadis*. The second round of NDD in Chhattisgarh was observed in 16 districts of the state on **February 10, 2016** followed by mop-up day (MUD) on **February 15, 2016** covering school enrolled children (6-19 years) and out-of-school children (6-19 years) in *anganwadis*. Evidence Action-Deworm the World Initiative, as the technical assistance partner, coordinated and facilitated planning and implementation of the deworming round in the state.

Evidence Action engaged an independent research agency to provide process monitoring on both deworming day and mop-up day to assess the preparedness of *anganwadis* and schools to implement mass deworming program, followed by coverage validation to evaluate accuracy of the reporting data and coverage estimates post deworming. Due approvals for the survey obtained from Department of Health & Family Welfare, Government of Chhattisgarh.

On NDD and mop-up day, 100 monitors visited 213 randomly selected government, government aided, and private schools, and 200 *anganwadis* to observe the ongoing deworming activity. Coverage validation was undertaken February 20-26, 2016 during which 100 monitors visited 329 randomly selected government, government aided, and private schools and 300 *anganwadis* to verify their reported treatment figures. Findings from independent monitoring highlighted that around 97% of schools and 92% of the *anganwadis* observed deworming on NDD and MUD. Approximately 90% of schools and *anganwadis* reported to receive sufficient drugs for deworming. Around 84% of schools and 74% of *anganwadis* received program posters and banners. However, integrated distribution of NDD kits[2] was relatively low for both schools (20%) and *anganwadis* (18%). 79% of schools and 78% of *anganwadis* received training for recent round of deworming. 15 out of the 20 private schools reported being trained within the last two months for deworming activity. Awareness of the causes of worm infection, possible adverse events, and adverse event protocols was high among teachers and *anganwadi* workers.

High compliance with procedures and protocols was observed across the schools and *anganwadis* in the state. Almost all school principals, teachers and *anganwadi* workers were

[1] WHO: Soil-transmitted helminth infections. *www.who.int/mediacentre/factsheets/fs366/en/*

[2] Integrated distribution of NDD kits including deworming drugs, banner/poster and handout-reporting forms and provided to schools and AWC during the trainings at block or PHC level.

able to accurately mention at least one of the symptoms of adverse events. Although the basic knowledge of processes for management of adverse events was high, but substantial proportion of teachers and *anganwadi* workers had awareness of adverse event reporting protocols. Cases of any adverse events were reported in around 10% of schools and 8% of *anganwadis*.

Coverage validation data revealed that around 69% of schools followed correct protocols for recording the number of children dewormed. However, around 27% of schools did not adhere to any recording protocol. A substantial proportion of *anganwadi* workers did not have a list of out-of-school children (43%). Despite of substantial compliance with recording protocols, coverage validation data for school enrolled children exhibited high overall inflation (32%; verification factor of 0.76) of treatment figures. The overall inflation of out-of-school children was 79% (verification factor of 0.55). Nevertheless, interviews indicated that 99% of all enrolled children received a deworming tablet.

The monitoring exercise conducted during Chhattisgarh's second round of NDD also highlights opportunities to strengthen future rounds. As training is a critical component of the program, quality and coverage of the program can be improved in future rounds by ensuring timely communication of training dates to schools and *anganwadis*. Improved attendance of school teachers in trainings would enable effective implementation of the program in the schools. The database of functionaries across all stakeholder department needs to be regularly updated and strengthened to ensure information dissemination on the program is reaching the key audience in a timely manner to allow for action as needed. Efforts are also required to ensure that those teachers who attend training also impart adequate training to other teachers in the school. Further, efforts are needed to strengthen the integrated distribution of deworming kit in the training. Integrated distribution would ensure availability of drugs at school and *anganwadi* level and enable more widespread use of IEC materials for community mobilization and awareness, potentially improving the reach of the program. In addition, tracking the distribution cascade to identify and fill gaps in a timely manner will likely improve the availability of IEC materials. Enhanced engagement of ASHAs and AWWs is also critical for the success of program. Utilizing incentives approved by the national government for ASHA workers will provide motivation to these workers to mobilize out-of-school children. Moreover, as most *anganwadi* centers did not have the list of out-of-school children, efforts are required to proactively engage ASHAs to prepare the list of all out-of-school children in the community. Schools and *anganwadis* should be encouraged to retain a copy of school and *anganwadi* reporting forms after submission. The high levels of reporting inflation suggest that additional efforts are needed to increase accuracy of program coverage reporting, including an increased emphasis on the importance of reporting protocols during training, in IEC materials and through training reinforcement messages (SMS).

2. MONITORING AND EVALUATION

2.1 Study Background

Understanding program reach and quality is a key component of a successful deworming intervention. In order to fulfil this need, Evidence Action worked intensively with Government of Chhattisgarh's health and education departments to assess the quality of program planning and implementation with an ultimate focus on developing recommendations for improvements

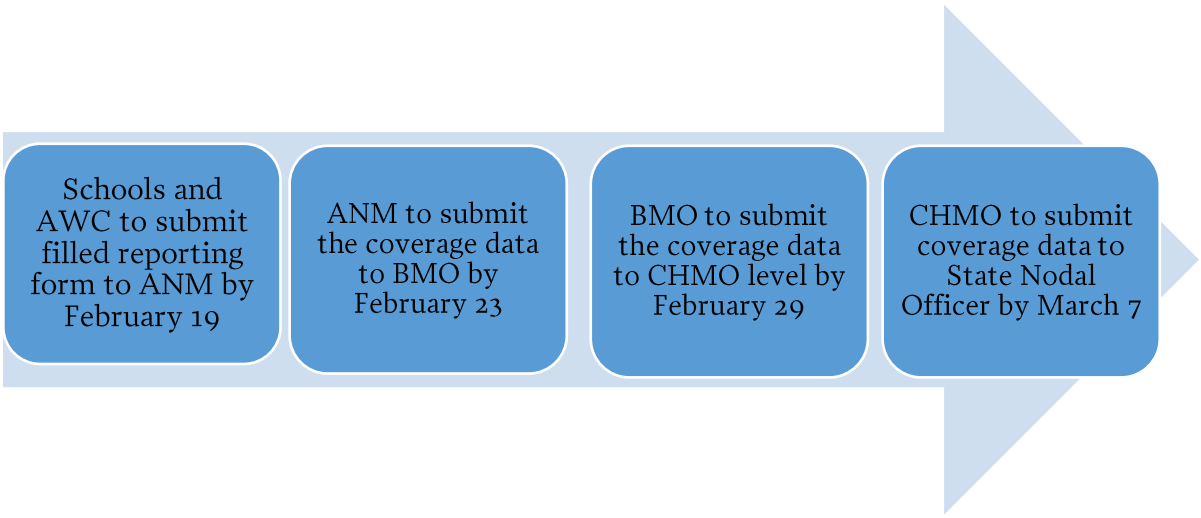
in future rounds. The preparedness of schools, *anganwadis,* and health systems to undertake deworming; adherence to the prescribed deworming processes; and ensuring accurate coverage reporting are key components of the supervision process. Three processes of monitoring and evaluation are included in each deworming program round: (1) process monitoring, (2) coverage reporting and (3) coverage validation.

2.2 Process Monitoring, Coverage Reporting, and Coverage Validation

Process Monitoring assesses the preparedness of schools, *anganwadis*, and health systems to implement mass deworming and the extent to which they have followed correct processes to ensure a high quality deworming program. Evidence Action assessed program preparedness during the pre-deworming phase and selected independent monitors who observed the processes on deworming day and mop-up day. Evidence Action conducted process monitoring in two ways: a) telephone monitoring and cross verification and b) physical verification by visiting schools and training venues.

Coverage Reporting assesses the estimated number of program beneficiaries, and is a crucial component to measure success. With close support from Evidence Action's state and field teams, the Department of Health collected and compiled the coverage report for NDD within the established reporting timelines. School teachers and *anganwadi* workers had been trained on the recording and reporting protocols. These protocols, along with the reporting cascade and timelines (refer to Figure A below), were shared with all districts through the state's directives. In order to improve the accuracy of coverage reporting by the schools and *anganwadi*s, every participating school and *anganwadi* was instructed to follow a recording protocol for deworming. Every teacher and *anganwadi* worker was required to put a single tick mark (✓) next to a child's name in the attendance register if they received albendazole on deworming day, and a double-tick mark (✓✓) if received on mop-up day. These tick marks are the basis for the numbers reported by every school and *anganwadi*. Schools and *anganwadi*s provided the number of enrolled/registered children dewormed by counting the single and double tick marks in the registers. Headmasters and *anganwadi* workers compiled the number of dewormed children from attendance registers, filled out the summary reporting format, and submitted it to the next level.

Figure A: Reporting cascade and timeline



Coverage Validation is an ex-post check of the accuracy of the reporting data and coverage estimates. Coverage validation data was gathered through interviews with headmasters and three students (in three different randomly selected classes) in each school, and by checking all class registers and reporting forms. These activities provided a framework to validate coverage reported by schools and to calculate the level of inaccuracy in the data by comparing the ticks with numbers reported in school reporting forms.

2.3 Sampling and Sample Size

Through a competitive selection process, Evidence Action hired an experienced independent research agency, GFK Mode Pvt. Ltd., to implement monitoring across in 50 blocks of 16 districts of the state. A two-stage probability sampling procedure was adopted to select schools for process monitoring and schools and *anganwadis* for coverage validation (Table A). For process monitoring, *anganwadis* near sampled schools were selected. Process monitoring was carried out on two days: NDD (February 10, 2016) and mop-up day (February 15, 2016). On each day, 100 monitors aimed to visit 100 randomly selected government/government aided schools and 100 nearby *anganwadis* to observe deworming. Coverage validation was undertaken during February 20-26, 2016 during which 100 monitors targeted to visit 300 randomly selected government/government aided schools, and 300 *anganwadis* to verify the reported coverage numbers. Additionally five monitors visited 10 private schools on NDD and mop-up day, and 30 private schools during coverage validation.

Process information was collected to check for adequacy of drug supplies and awareness materials; assess whether teachers had received training; and check knowledge of adverse event management and reporting protocols. During coverage validation monitors collected information by interviewing school headmaster/teacher, *anganwadi* workers, checking attendance registers, and interviewing three children from each school.

Table A: Target and Coverage of schools and *anganwadis* during Independent Monitoring

Indicators	Process monitoring		Coverage validation	
	Target	Achieved	Target	Achieved
Total number of districts	16	16	16	16
Total number of blocks	50	50	50	50
Total number of schools	220	213	330	329
• Total number of government/ government-aided schools	200	201	300	299
• Total number of private schools in one district	20	21	30	30
Total number of children interviewed in schools	220	147	990	963
Total number of *anganwadis*	200	200	300	300

2.4 Independent Monitoring Formats

To ensure comprehensive coverage and triangulation of data, four formats were administered- one each for process monitoring at schools and *anganwadis* on NDD and mop-up day, and one each for schools and *anganwadis* for coverage validation. Evidence Action designed and finalized formats in consultation with Department of Health, Government of Chhattisgarh. The formats were translated into the regional language, checked to ensure that the language was concise and easily understandable, and loaded onto tablet PCs. Using these four standard formats, monitors collected information on training, availability and use of IEC material, availability and submission of reporting forms, and frequency and management of adverse events.

2.5 Authorization from Government

The surveys were conducted with prior approval of the state government. An approval letter was issued by Department of Health, Government of Chhattisgarh. Each monitor carried copies of the letter explaining the process of monitoring and coverage validation, and requesting participation from school and *anganwadi* staff.

2.6 Training of Trainers and Independent Monitors

A two-phase training program was organized at the state level. In the first phase, representatives from Evidence Action provided a one-day comprehensive training to three master trainers of GFK in Delhi on February 5, 2016. These master trainers conducted a two-day training of 120 monitors during February 7-8, 2016 in batches of 50-55 monitors, supervised by Evidence Action. A total of 130 trainees participated, including 20 buffer monitors and 10 supervisors.

The training included discussions on the deworming initiative, importance of independent monitoring, and monitoring formats. Afterward, all relevant formats were shared. Monitors received a demonstration of tablet PCs and were briefed on computer assisted personal interview (CAPI) administration process and troubleshooting. Upon completion of these modules, each monitor used the tablet to complete at least one practice session in the presence of trainers. During this period, trainers replied to any queries, and a live demonstration was conducted after the practice session. At the end of the training, all participants were tested on their degree of comprehension and ability to work in the field.

2.7 Field Implementation

Each monitor was allotted two schools and two *anganwadis* for process monitoring. Subsequently, they were allotted three schools and three *anganwadis* to survey for coverage validation. Monitors were provided a tablet PC, charger, printed copy of monitoring formats, and albendazole tablets for demonstration. The details of sample schools were shared with them one day before fieldwork commenced to ensure that monitors do not inform local educational authorities ahead of their visit, thus potentially affecting compliance.

For process monitoring monitors were instructed to visit schools first and then a nearby *anganwadi*. In most cases, however, schools administered albendazole tablets only after the mid-day meal, so monitors were instructed to revisit those schools around noon after collecting information from *anganwadis*. For coverage validation, however, the strategy was slightly modified; if a school was closed or non-traceable, monitors were asked to cover the next school on their list, and return to the first school at another time on a subsequent day. If the school was non-traceable or closed consistently after attempting three visits, a new school was substituted for the old one.

2.8 Quality Control

Appropriate quality control measures were taken to ensure data collected was accurate and comprehensive. Approximately 15% of schools and *anganwadi*s were contacted over the phone, next day to confirm that they had participated in monitoring and validation. In addition, district coordinators visited sampled schools to spot check the monitoring processes and tele-callers contacted schools and *anganwadis* to verify monitoring visits. In all cases, school and *anganwadi* staff were asked to sign a participation form and provide an official stamp, verifying that the school or *anganwadi* was actually visited. The data synced to tablets was vetted as quickly as possible to ensure comprehensiveness, and errors were subsequently addressed by follow up visits or calls.

3. KEY FINDINGS

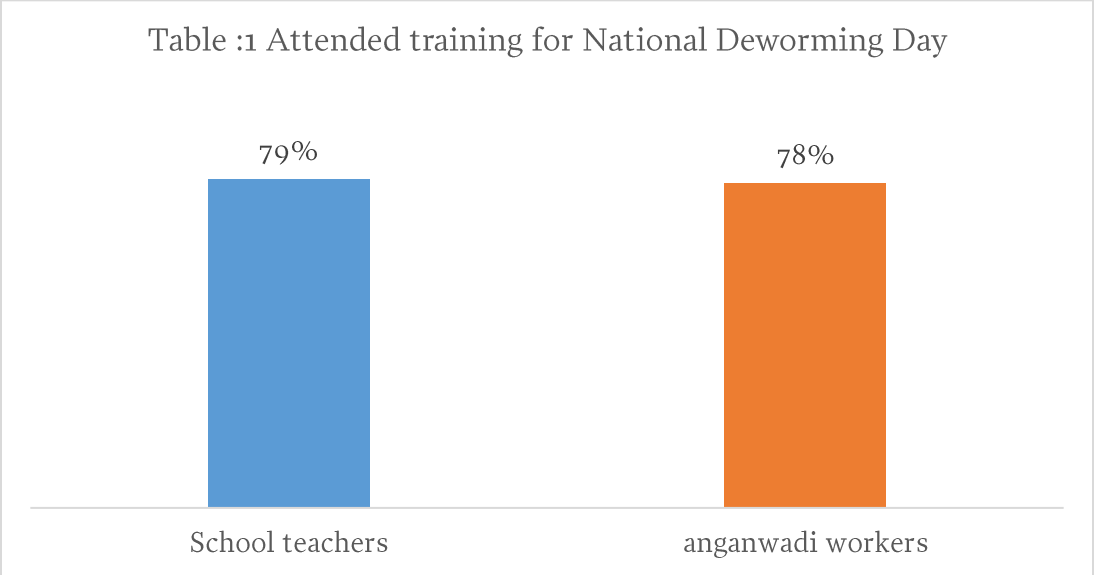
Key results from independent monitoring are provided below, with further details shared in annexures.

3.1 Training

For effective implementation of NDD, teachers and *anganwadi* workers are trained prior to the deworming day. Independent monitoring data demonstrated that teachers/ headmasters from 79% of schools and 78% of *anganwadi* workers received training for the deworming round[3] **(Figure 1).** Among those who did not attend training, 55% of teacher/headmasters and 33 % of anganwadi workers stated that the location was too far away followed by 31% of teacher/headmasters. Moreover all the *anganwadi* workers who did not attend the training were also unaware about the date/ timings of training **(Annexure 1 – Table 1)**.

15 of the 20 sampled private schools reported to have received training on deworming in the last two months. Among private school headmasters and teachers, unawareness about training date and time was also the major reason for not attending the training.

Approximately 31% of schools and 40% of *anganwadis* reported that they did not receive an SMS about deworming schedule **(Annexure 1 – Table 1)**. Additionally, even in schools where a headmaster/teacher attended training, only 68% provided training to other teachers in the school **(Annexure 1 – Table 1)**. Only 11 of the 20 private schools reported to have received an SMS about deworming.



3.2 Integrated Distribution of Deworming Materials Including Drugs

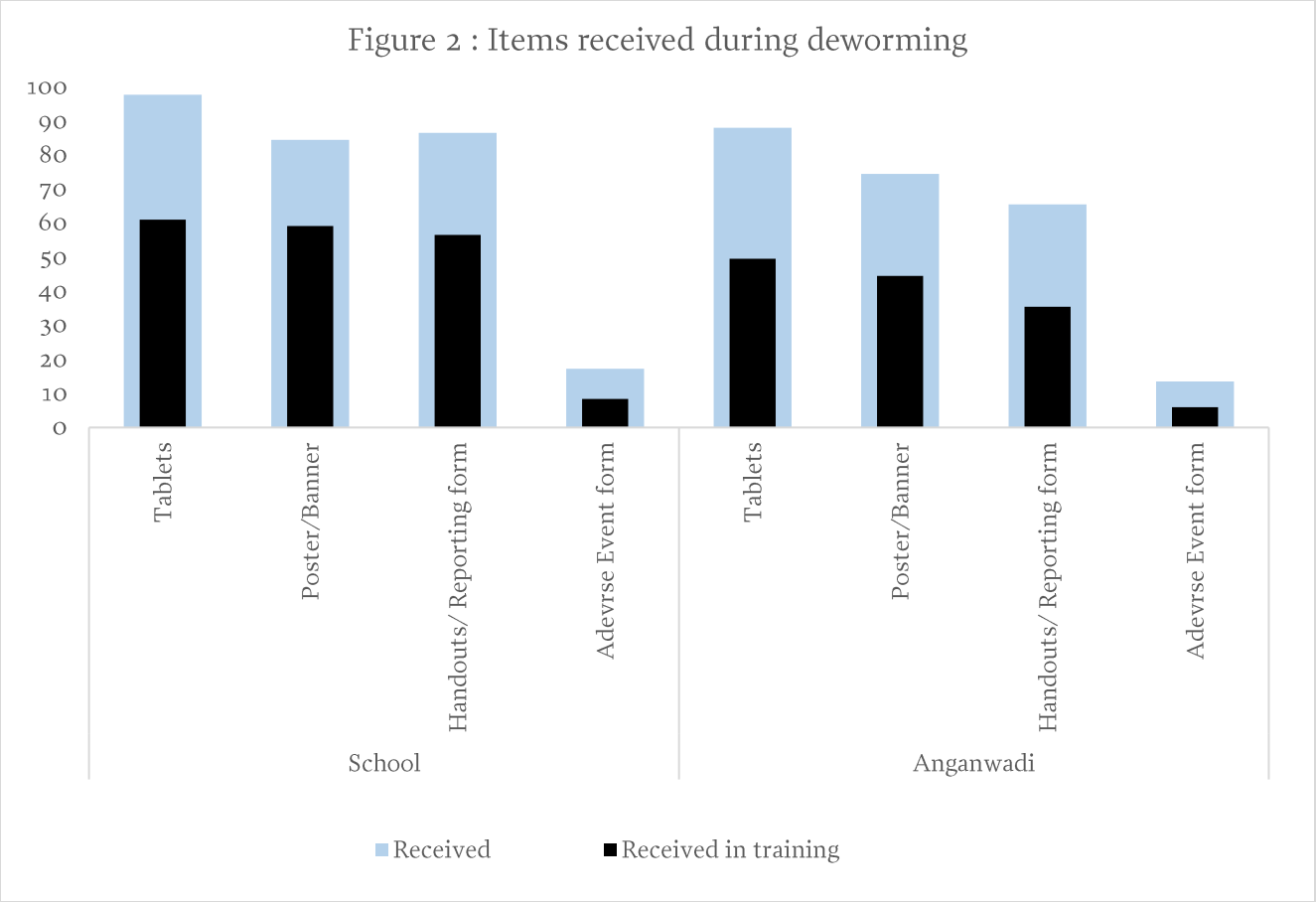
As per NDD guidelines, there should be an integrated distribution process, providing all necessary IEC and training materials along with deworming tablets to schools and *anganwadi*

[3] Findings from both process monitoring and coverage validation were grouped together for this indicator.

centers at Block level training[4]. Despite the well-defined NDD kit and integrated distribution cascade, findings from independent monitoring demonstrate that only 20% of schools and 18% of *anganwadis* in the state had integrated distribution of deworming materials. **(Annexure 1 – Table 1)**.
Around 98% of schools and 88% of anganwadis received tablets for deworming; however, only 61% of schools and 50% of *anganwadis* received these tablets during training **(Figure 2 & Annexure 1 – Table 2).** Moreover, 90% of schools and *anganwadis* reported to have received sufficient drugs for deworming **(Annexure 2 – Table 1).** 85% of schools and 75% of *anganwadis* received poster/banners whereas, around 59% of schools and 44% of *anganwadis* received banner/posters in training **(Figure 2 & Annexure 1 – Table 2).** About 87% of schools and only 66% of *anganwadis* received handouts/reporting forms, and 57% of schools and 36% of anganwadis received those in the training. Only 17 % of schools and 14 % of *anganwadis* received an adverse event reporting form. **(Figure 2 & Annexure 1 – Table 2).**

All 20 private schools covered during process monitoring reported to receive tablets for deworming; however, only five of them reported to receive tablets in training. 17 schools received banner/posters and 16 received handout/reporting form. Moreover, 12 and 16 of the private schools reported to receive poster/banner and handouts/reporting forms in the training. Only three of 20 private schools received the adverse event reporting form. During coverage validation, 21 out of 23 private schools reported to have received sufficient quantity of deworming tablets.

[4] 'National Deworming Day, Operational Guidelines 2016, Ministry of Health and Family Welfare, Government of India http://nrhm.gov.in/images/pdf/NDD-2016/Guidelines/Draft_NDD_2016_Operational_Guidelines.pdf



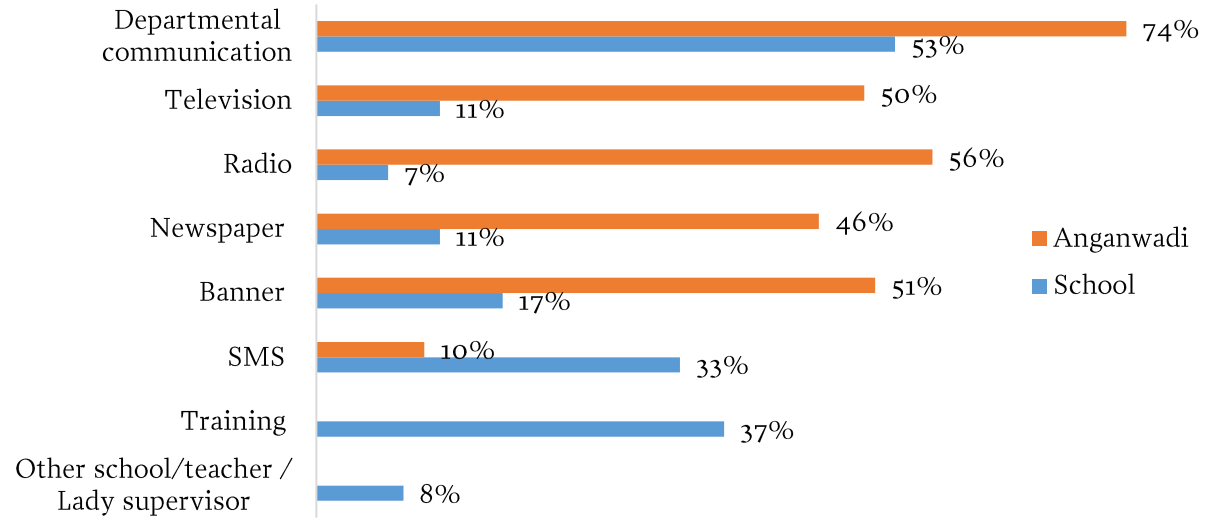
3.3 Source of Information about Recent Round of Deworming

Departmental communication was the major source[5] of information for the schools (52%) and *anganwadis* (74%) for deworming **(Figure 3).** This was followed by training (37%) and SMS (33%) for schools; radio (55%) and banner (40%) for *anganwadi*s. Only 10% of *anganwadi* workers came to know about deworming through SMS **(Figure 3 & Annexure 1 – Table 1).**

Departmental communication was also the primary source of information for 12 out of 20 private schools. Overall, 85% of the children interviewed were aware about deworming. In private schools 11 of the 15 children interviewed were aware about deworming activity. Most children reported their primary source of information about deworming to be verbal instructions and explanation from their teacher (92%), followed by banner/poster and parents/siblings. **(Annexure 1 – Table 5).**

[5] Major source of information is the maximum number of a medium reported by school teachers/headmaster and *anganwadi* workers

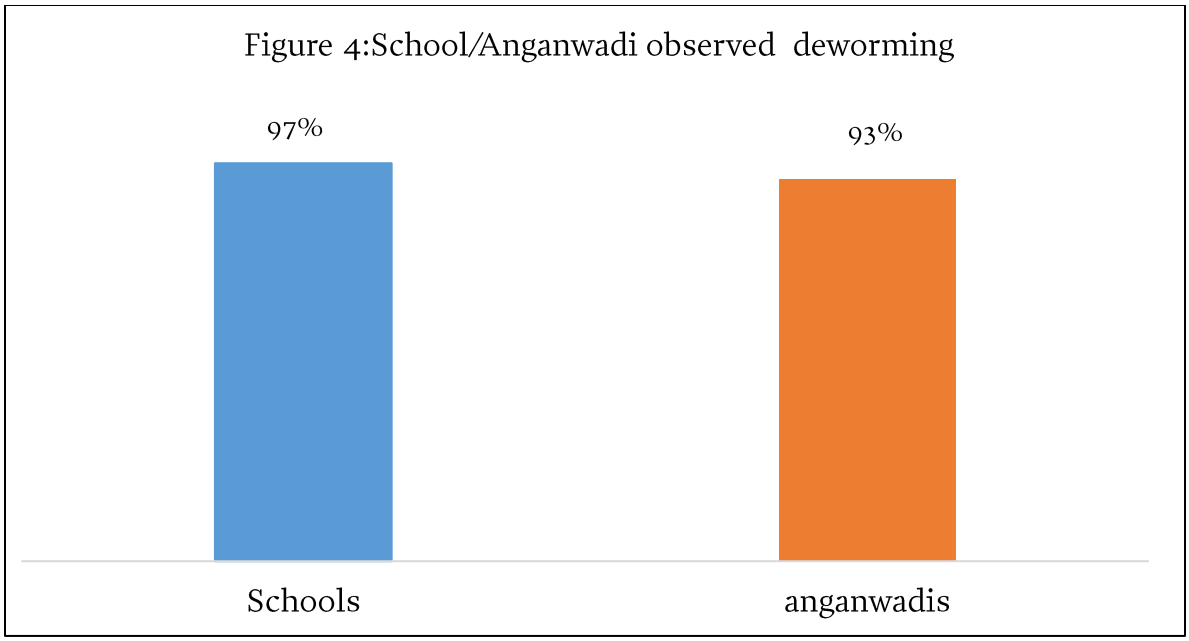
Figure 3: Source of information about recent round of deworming



3.4 Implementation of Deworming

Independent monitoring data depicted that around 92% of schools and 81% of *anganwadis* reported to conduct deworming on the day of visit; however, monitors observed ongoing deworming activity in 69% of schools and 49% of *anganwadis* respectively **(Annexure 1 – Table 1 & 3)**. Further, coverage validation demonstrated that 97% of schools and 93% of *anganwadis* had dewormed children during deworming or mop-up day **(Figure 4 & Annexure 2 – Table 1)**. Out of total enrolled children who were interviewed on deworming day and mop-up day, around 93% reported receiving a tablet on one of these days. Prima facie, this suggests that deworming occurred in a large proportion of schools and *anganwadis* on one of the deworming days **(Annexure 1 – Table 5)**. 15 out of 17 children interviewed in private schools reported to have received the tablet.

17 out of the 20 monitored private schools observed deworming on both NDD and mop-up day, however, monitors observed deworming activity in 13 schools. During coverage validation, 24 of the 30 sampled private schools observed deworming on NDD and mop-up day.

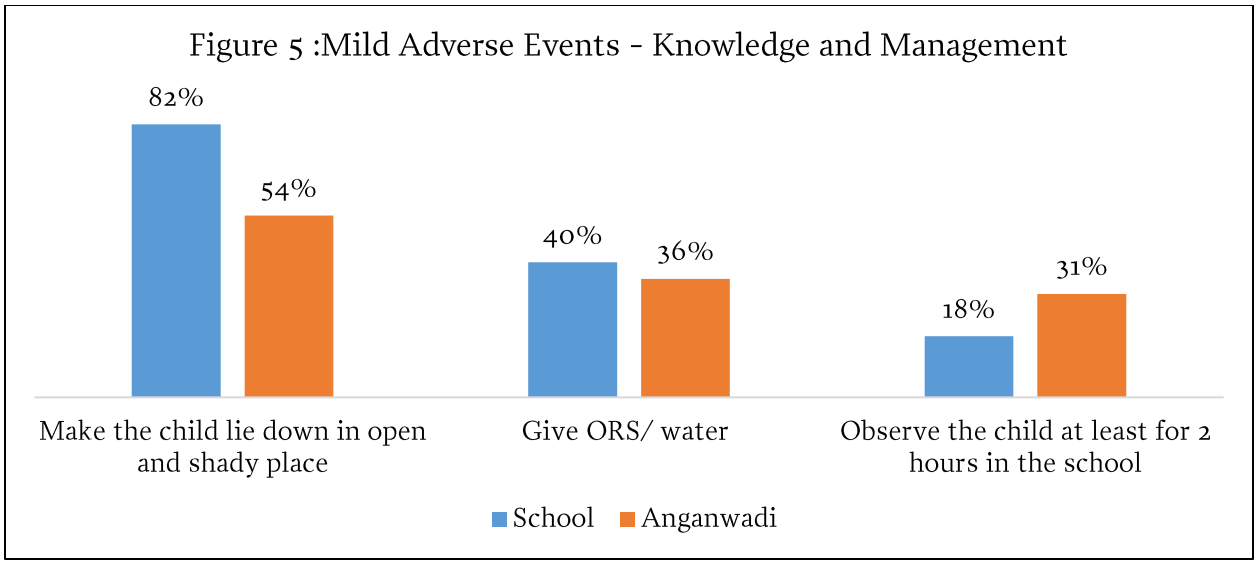


3.5 Adverse Events - Knowledge and Management

Interviews with headmasters and teachers revealed substantial awareness regarding potential adverse events, and understanding of appropriate protocols to follow in case of such events. Around 87% of schools and *anganwadi* workers asked children if they were sick before administering tablets, and 92% of schools and 97% of *anganwadi workers* did not administer tablets to a sick child **(Annexure 1 – Table 3)**. 75% of headmasters and 54% of *anganwadi* workers listed abdominal pain as a symptom of an adverse event. Around 52% headmasters and 33% of *anganwadi* workers recognized nausea as a symptom **(Annexure 1 – Table 1)**. Further, 81% of school teachers and 55% of *anganwadi* workers knew to have a child lie down in an open, shady place in case of any symptoms. 40% of schools and 36% of *anganwadis* knew to give ORS/water and observe for two hours **(Figure 5).** Further, around 60% of schools and *anganwadis* reported the need to call a PHC doctor if symptoms persisted **(Annexure 1 – Table 1)**.

The high proportion of teachers and *anganwadi* workers who listed adverse event symptoms, and describe response protocols, suggest that schools and *anganwadis* have substantial awareness about the processes to be followed. Almost all interviewed teachers listed at least one symptom and one measure to be followed in case of an adverse event. Around 10% of schools and 8% of *anganwadis* reported any case of mild adverse event **(Annexure 1 – Table 3)**.

Only five out of the 20 sampled private schools were aware of the possible adverse events that could be reported by children after taking the tablet and accurately mentioned at least one symptom. Vomiting and abdominal pain were the most frequently reported symptoms. Four of the private schools reported to have a child lie down in an open, shady place in case of any symptom and knew to give ORS/water. None of the private schools surveyed reported any case of adverse event.



3.6. Recording Protocol

Coverage validation data **(Annexure 2 – Tables 2 & 4)** demonstrated that 69% of schools adhered to the reporting protocols. Of the non-adhering schools, 27% did not follow any recording protocol **(Annexure 2 – Table 2)**. During training, teachers and *anganwadi* workers were instructed to retain a copy of school/*anganwadi* reporting forms; however, 22% of headmasters and 9% of *anganwadi* workers interviewed during process monitoring were not aware of this requirement **(Annexure 1 – Table 1)**. During coverage validation, reporting forms were available in only 48% of schools and 15% of *anganwadis*. Further, as per NDD guidelines, ASHAs were required to prepare a list of the children not attending schools and *anganwadis* and submit it to *anganwadi* workers to increase coverage of these children; however, findings suggest that only 57% of *anganwadis* had lists of out-of-school children (6-19 years) **(Annexure 1 – Table 1)**. Nevertheless, 99% of schools had completed the school reporting forms **(Annexure 2 – Table 1)**.

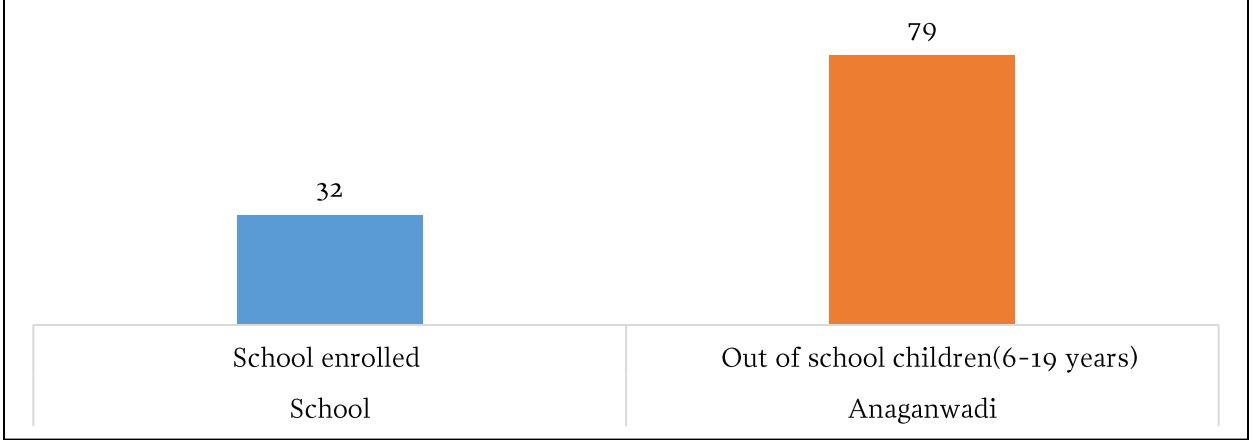
3.7 Coverage Validation

In schools and *anganwadis* sampled for coverage validation, state-level verification factors were calculated. Verification factors are common indicators for Neglected Tropical Disease control programs around the world. The verification factor compares the aggregated number of ticks in school/*anganwadi* registers (indicating that children were dewormed) to the coverage reported by schools/*anganwadis* in reporting forms submitted to the state. A verification factor of 1 means the schools reported the exact same figures that they recorded on deworming day. A verification factor less than 1 indicates over-reporting, while a verification factor greater than 1 indicates under-reporting. Thus, the verification factor was estimated on the basis of availability of a copy of reporting forms at schools and *anganwadis*.

As mentioned in the previous section, only 48% of schools and 14% of *anganwadis* had a copy of the reporting form available after deworming and mop-up day. The state level verification factor for enrolled children was 0.76, indicating that for every 76 enrolled children who were

recorded as dewormed in schools, the school reported that 100 enrolled children had been dewormed **(Figure 6 & Annexure 2 – Table 2)**. This corresponds to an overall 32% inflation of reporting in the state, meaning that reported numbers appear to be approximately 32% higher than the numbers recorded in attendance registers. Similarly, the state level verification factors for out-of-school (6-19 years) children was 0.55 with corresponding inflation of 79% **(Figure 6 & Annexure 2 – Table 2)**. Training was found to increase the accuracy of reporting. However, inflation was observed significantly high among trained schools too: trained schools had 24% inflation in reporting, while untrained schools had 58% inflation in reporting **(Annexure 2 – Table 2)**.

Figure 6: State level Inflation for dewormed children



Further, attempts were made to understand the maximum number of enrolled children that could have been dewormed. Coverage validation demonstrated that 97% of schools did deworming on either of the days and attendance data showed that 82% of the total school enrolled children were in attendance **(Annexure 2 – Table 2)**. Moreover, 99% of children interviewed during coverage validation reported to have received a deworming tablet and consumed it under the supervised administration in schools **(Annexure 2 – Table 3)**. Based on deworming implementation status and attendance of enrolled children on deworming and mop-up day and children's interview, maximum 78% (99% children out of 82% present in 97% of schools conducted deworming) children could have been dewormed in the state.

4. RECOMMENDATIONS

Since the program follows a fixed-day approach and engages multiple stakeholders, it is critical that all program components are aligned for successful program implementation and to prevent gaps and delays. Of particular importance are IEC, training, drug logistics, and adverse event management related preparedness. Following are the key recommendations for program improvements that emerged from this exercise.

1. The preparatory activities leading up to NDD 2016 were conducted under a compressed time schedule. In forthcoming rounds, all stakeholder engagement for planning and preparations should be initiated in advance as per the operations plan.

2. In coordination with all the stakeholder departments, consensus on fixing target population would be helpful to assess the extent of coverage and expanding reach to children not attending schools and *anganwadis.*

3. Training is a critical component of the program. Findings about training attendance suggest that quality and coverage can be improved in future rounds by ensuring that sessions are planned earlier and that greater emphasis is placed on communicating training dates. Better attendance at trainings may also be used to capture contact details, improving the ability of the deworming program to reach out to the ultimate implementers of the program. Improving attendance at trainings will likely benefit the distribution cascade as well, since drugs and materials are intended to be distributed at the time of training.

4. As substantial proportion of school headmasters and *anganwadi* workers did not receive deworming related SMS during NDD, the contact database of functionaries across all stakeholder department needs to be regularly updated and strengthened to ensure comprehensive information dissemination to concerned officials/functionaries in a timely manner.

5. Findings suggest a need for greater focus on integrated distribution to ensure that sufficient drugs and other materials reach schools before deworming day. This requires efficient planning for the integrated training and distribution cascade to ensure that it works effectively.

6. Intensive efforts towards generating community awareness and mobilizing children is critical to achieve high coverage. For instance, parents and siblings may be targeted with specific community mobilization activities to increase coverage of out-of-school children. More engagement of ASHAs and AWWs should be encouraged, since they conduct community meetings, mobilize children, and conduct health education activities. Providing ASHAs with incentives, as approved by the national government, will motivate them to conduct activities for community engagement. Further, as most of the *anganwadi* centers did not have the list of out-of-school and non-registered children, efforts are required to engage ASHAs proactively to prepare these lists in their communities.

7. Coverage validation data, as well as differences in reporting between trained and untrained schools, suggest that a greater emphasis on recording protocols will improve the quality of coverage data in the future rounds.

8. The high levels of reporting inflation suggest that additional efforts are needed to increase accuracy of program coverage reporting, including increased emphasis on reporting protocols in trainings, IEC materials, and reminder SMS. Moreover, given the high inflation in reporting in both schools and *anganwadis*, it is imperative to undertake data quality assessments (DQA) to understand the administrative and reporting challenges with program data management.

5. WAY FORWARD

Program monitoring in Chhattisgarh has provided useful insights for increasing scale and coverage in future rounds. Aligned to the NDD operational guidelines, efforts will be coordinated to support the stakeholders intensively in the initial deworming rounds, while

drawing from experiences from this round in the state. As the program has achieved significant coverage for enrolled children in schools, moving forward the strategies will focus on increasing coverage of unregistered and out-of-school children, and reaching children in private schools. Efforts will be directed towards encouraging schools and *anganwadis* to follow standard recording protocols to improve the accuracy of coverage data. Further, timely implementation of a DQA will help to understand the data quality challenges and make recommendations for improvements in future rounds. With the high burden of soil transmitted helminths (STH) in Chhattisgarh, continued advocacy efforts will also help to promote program sustainability by ensuring committed resources for bi-annual deworming rounds under the state's Program Implementation Plan.

ANNEXURE 1

Table: 1 Interview with headmaster/headmistress/principal and *Anganwadi* workers

Indicators	School N=213		Anganwadi N=200	
	%	N	%	N
Type of School				
Govt./Govt. Aided schools	90.6	193	NA	NA
Private Schools	9.4	20	NA	NA
Respondent of the section			NA	NA
Headmaster/Principal	78.4	167	NA	NA
Vice principal	5.6	12	NA	NA
Nodal Teacher	11.3	24	NA	NA
Any other teacher	4.7	10	NA	NA
Category of school			NA	NA
Primary(1 to 5)			NA	NA
Primary with upper primary(1 to 8)	67.1	143	NA	NA
Primary with upper primary and secondary(1 to 10)	6.1	13	NA	NA
Primary with upper primary secondary and higher secondary(1 to 12)	1.9	4	NA	NA
Upper primary only(6 to 8)	0.9	2	NA	NA
Upper primary with secondary and higher secondary(6 to 12)	16.9	36	NA	NA
upper primary with secondary(6 to 10)	1.4	3	NA	NA
Secondary only (9 to 10)	1.4	3	NA	NA
Secondary with higher secondary(9 to 12)	4.2	9	NA	NA
Higher Secondary only or Jr. college(11 to 12)			NA	NA
Did Anganwadi worker attend training in last 2 months	79.8	180	81.5	163

Did trained teacher provide training to other teachers				
Yes, trained all other teachers	68.2	116	NA	NA
Yes, trained some other teachers	18.2	31	NA	NA
No, did not train other teachers	12.4	21	NA	NA
Don't know /don't remember	1.2	2	NA	NA
Reason for not attending official training				
Location was too far away	54.8	23	33.3	2
Did not know the date/timings	31.0	13	100	6
Busy in other official work	9.5	4	33.3	2
Attended deworming training in the past	4.7	2	33.3	2
Not Necessary	2.3	1	33.3	2
Source of information about recent round of deworming program				
Departmental communication	52.5	112	73.5	142
Television	11.2	24	49.7	96
Radio	6.5	14	55.9	108
Newspaper	11.2	24	45.6	88
Banner	16.9	36	50.7	98
SMS	33.3	71	9.8	19
Training	37.0	79	0	0
Other school/teacher	7.9	17	0	0
Awareness about the ways a child can get worm infection	92.0	196	96	192
Different ways that children can get worm infected				
Having foods without washing hands	52.6	112	83.5	167
Not washing hands after using toilets	80.1	157	80	160
Not using sanitary latrine	54.1	106	50.5	101
Moving in bare feet	57.7	113	53.5	107
Consume vegetables and fruits without washing	56.1	110	50	100
Having long and dirty nails	53.6	105	48.5	97
Receive SMS about the deworming program	69.0	147	60	120
Preference to receive the SMS				
Morning	70.4	150	19.5	39
Afternoon	22.1	47	9.0	18
Evening	12.7	27	11.5	23
Any time	12.2	26	38.0	76
Do not prefer the SMS	22.5	48	23.0	46
Having integrated distribution(Tables, Poster/Banner, handouts/reporting, adverse event reporting form) in training	19.8	40	18.0	36
Visibility over the Deworming Day Poster/Banner is posted				

Clearly posted/ visible to all	89.4	161	80.5	120
Hidden in a room/partially visible.	5.6	10	4.7	7
Not posted/ not visible	5.0	9	14.7	22
Awareness about to whom to submit the completed School/Anganwadi Reporting	61.3	130	85.0	170
Retain a copy of the School/Anganwadi Reporting Form at the school after submitting one copy	77.9	166	91.0	182
Teachers/Anganwadi who think any adverse event can occur after taking the deworming tablets	31.5	67	26.0	52
Possible adverse events could be reported by children after taking the tablets				
Mild abdominal pain	74.6	50	46.1	24
Nausea	52.2	35	32.6	17
Vomiting	74.6	50	53.8	28
Diarrhea	31.3	21	19.2	10
Fatigue	32.8	22	19.2	10
Response in case a child complains of mild stomach ache, nausea, vomiting, and diarrhea after taking the tablets,				
Make the child lie down in open and shady place	81.7	174	54.5	109
Give ORS/ water	40.4	86	35.5	71
Observe the child at least for 2 hours in the school	18.3	39	31.0	62
Response in case the child continues to report symptoms of stomach ache, vomiting, diarrhea, etc. even after a few hours				
Call PHC or emergency number	42.3	90	48.9	94
Take the child to the hospital /call doctor to school	59.6	127	57.2	110
Deworming activity going in your school/Anganwadi today				
Yes, getting now	70.4	150	80.5	161
Yes, after few hours	21.1	45	0	0
No, will not administer today	8.5	18	19.5	39

Table: 2 Integrated Distribution of Drugs and IEC material

Items Received in training	Schools			Anganwadi		
	Received	Verified	Received in training	Received	Verified	Received in training
Tablets	97.7	93.3	62.5	88.0	93.2	56.3
Poster/Banner	84.5	96.1	70.0	74.5	96.6	59.7
Handouts/ Reporting form	86.5	93.5	65.4	65.5	93.1	54.2
Adverse event reporting form	17.3	78.3	48.6	13.5	85.2	44.4

Note:-The sample size for items received in schools and *anganwadis* were 213 and 200 respectively
*The denominator for verified is the number of particular item received to schools and *anganwadis*

Table3: Observation of deworming activity in the class/*Anganwadi*

Indicators	Schools		Anganwadi	
	%	N	%	N
Deworming activity is taking place in the class/Anganwadi	69.0	147	48.5	78
Teachers/Anganwadi worker giving any health education related to deworming				
Yes	91.8	135	87.1	68
No	8.2	12	12.8	10
Could not observe as I reached late				
What are being included by the teacher/ Anganwadi worker as a part of health education to children				
Harmful effects of worms	65.2	88	60.3	41
How worms get transmitted	69.6	94	58.8	40
Benefits of deworming	60.0	81	55.9	38
Methods of worm infection prevention	50.4	68	57.4	39
Teacher/ Anganwadi worker were asking the children if they are sick/under medication before giving the tablet	86.4	127	87.2	68
What teacher/ Anganwadi worker did,If there was any sick child in the class room				
Gave Albendazole tablet to the child	7.9	10	2.9	2
Did not give the Albendazole tablet to the child	92.1	117	97.1	66
Students/children are told to chew the tablet before swallowing it	95.9	141	98.7	77
Deworming tablets were distributed by				
Teacher/headmaster	98.6	145	NA	NA
Anganwadi worker	1.3	2	96.2	75
Asha/ANM	0.0	0	2.6	2
Students	0.0	0	1.3	1
Teacher/ Anganwadi worker asking students to take Albendazole tablets in the class/ Anganwadi only	100.0	147	98.7	77
Teachers/ Anganwadi worker following the protocol of putting single tick (deworming day) or double tick (mop-up day) on each child's name/roll no. in the attendance register after giving them the deworming tablet	92.5	136	82.1	64

Practice followed by teacher ,if the ticking/double ticking protocol was not followed				
Prepare the separate list for dewormed child	27.2	3	71.4	10
Put different symbols	18.1	2	14.2	2
Nothing was done	54.5	6	7.1	1
Others specify			7.1	1
Any child not given the prescribed dose of Albendazole tablet				
Yes, less than the prescribed doze	7.5	11	12.8	10
Yes ,more than the prescribed doze	4.1	6	1.3	1
No, the prescribed doze is being given	88.4	130	85.9	67
Any adverse event observed (nausea, vomiting, stomach-pain diarrohea, etc.) after taking the tablet	10.2	15	7.7	6

*Deworming activity was observed by monitors in 147 schools and 78 *anganwadis*

Table: 4 Interview with school teacher

Indicators	%	N
Attended any official training for deworming program in the past 2 months	62.4	133
Received training for deworming		
At official level training	70.7	94
By Headmaster/ teacher	29.3	39
Awareness about the ways a child can get worm infection	87.8	187
Different ways that children can get worm infected		
Having foods without washing hands	91.4	171
Not washing hands after using toilets	82.4	154
Not using sanitary latrine	63.1	118
Moving in bare feet	60.4	113
Consume vegetables and fruits without washing	54.0	101
Having long and dirty nails	39.0	73
Others	2.1	4
Awareness about prescribed dose of albendazole		
One	99.5	212
More than one	0.5	1
Teachers who think any adverse event can occur after taking the deworming tablets	38.5	82
Possible adverse events could be reported by children after taking the tablets		
Mild abdominal pain	74.4	61
Nausea	63.4	52
Vomiting	74.4	61
Diarrhea	23.2	19

Fatigue	34.2	28
In case a child complains of mild stomach ache ,nausea, vomiting, and		
diarrhea after taking the tablets, Your response should be		
Make the child lie down in open and shady place	76.1	162
Give ORS/ water	44.1	94
Observe the child at least for 2 hours in the school	44.1	94
If the child continues to report symptoms of stomach ache, vomiting, diarrhea, etc. even after a few hours, Your response should be		
Call PHC or emergency number	57.3	122
Take the child to the hospital /call doctor to school	66.7	142
Don't know / don't remember	2.4	5

Note: - Interviews were conducted from 213 school teachers

Table: 5 Interview with school child

Indicators	School	
	%	**N**
Child got a white tablet in school today	93.3	182
Child was feeling sick before taking the tablet in the school today	5.5	10
Child got tablet by		
By Teacher / headmaster	94.5	172
By ASHA/ANM	1.1	2
By Other student	1.7	3
Other	2.8	5
Child consume tablet	98.9	180
Reason to not consume tablet		
Was feeling sick	50	1
I'm afraid of taking the tablet	50	1
Awareness of child that, how to consume the tablet		
Chewed tablet before swallowing	96.7	176
Swallowed tablet directly	3.3	6
Other, specify		
Awareness of child that, why tablet is provided		
Deworming	85.7	156
Any other answer(unrelated to deworming)	2.2	4
Don't know /don't remember	12.1	22
Child was aware about deworming activity	19.2	5
Source of information about deworming activity		
Teacher / school	91.9	148
Television	7.5	12
Radio	3.1	5
Newspaper	3.1	5
Poster/Banner	16.2	26

Parents/siblings	15.5	25

Note: - Interviews were conducted from 195 school enrolled children

ANNEXURE 2

Table 1: Findings from School/*Anganwadi* Coverage Validation data

Indicators	Schools		Anganwadis	
	%	N	%	N
Responses from the headmasters/principals interviewed				
Attended training for Deworming program	78.4	**258**	**75.3**	**226**
For schools that didn't attend training, reasons were				
Location was far away	4.2	3	2.7	2
Was not aware of the date/ timing of training	59.2	42	53.4	39
Busy in other official work	11.3	8	5.5	4
Attended Deworming training in the past	5.6	4	6.9	5
Not necessary	4.2	3	0.0	0
Schools received the followings				
Tablets	97.0	319	92.7	278
Poster	82.4	271	81.7	245
Hand-outs/Reporting form			88.3	265
Adverse event reporting form	87.2	287	21.3	64
Received SMS about Deworming program	63.2	208	50.7	152
Schools/Anganwadis had the sufficient drugs for Deworming	90.3	288	89.9	250
Schools/Anganwadis had surplus storage of drugs after Deworming	90.3	288	100.0	250
Schools/Anganwadis where copy of school reporting form was available after Deworming Day and Mop-Up Day	48.0	154	14.8	41
For schools/Anganwadis that didn't have copy of school reporting form, reasons were				
Did not receive	4.7	8	6.3	15
Submitted to ANM	87.1	148	90.3	214
Unable to locate	2.4	4	0.4	1
Schools/Anganwadi had complete school reporting form	98.1	151	95.4	41
Schools/Anganwadis observed Deworming **on Deworming Day or Mop-Up Day**	97.6	321	92.7	278
Schools/Anganwadis reported severe adverse event after taking the medicine	5.0	16	1.1	3
Anganwadi having list of out of school children (6-19 years)	NA	NA	57.2	159

Table: 2 School/*Anganwadis* Coverage Validation Indicators

Indicators	%
Schools where all the classes followed the correct recording protocol	69.7
Schools where one or more of the classes followed the correct recording protocol	72.2
Schools where none of the classes followed the correct reporting protocol	27.3
Schools where one or more of the classes followed other recording protocol	12.4
Schools where no reporting protocol was followed	27.3
State level verification factor	0.76
State inflation rate **(which measures the extent to which the recording in school reporting forms exceeds records at schools)**	31.5
State level inflation rate among trained schools **(which measures how much the coverage reported in reporting forms exceeded school records in registers for schools that received training)**	24.6
State level inflation rate among untrained schools **(which measures how much coverage reported in reporting forms exceeded school records in registers for schools that were not trained)**	58.2
School level inflation rate for schools that followed the correct recording protocol **(measures how much coverage reported in reporting forms exceeded school records in registers, for schools that were following recording protocols, i.e., ticking)**	5.6
Attendance on Deworming Day	78.3
Attendance on Mop-up day	70.8
Children who attended on both Deworming Day and Mop-up day	66.3
Maximum attendance of children on Deworming Day and Mop-Up Day **according to the CV data**	82.4
State level verification factor for out of school children (6-19 years)	0.55
State level inflation for out-of-school children(6-19 years)	79

This was asked to 329 and 301 anganwadis covered during coverage validation

Table: 3 Interview of children during Coverage validation

Indicators	%	N
Children received Deworming tablets	99.4	958
Children aware about the Deworming tablets	92.2	884

Children who consumed tablets in front of teacher/headmaster	99.2	950
Children consumed tablet	99.9	957
Way children consumed the tablet	97.1	937

Note:- Three children were interviewed from all those schools(321) who reported to observe deworming during NDD and mop-up day out of total 329 schools visited during coverage validation