

Deworm the World Initiative - Pakistan

A comprehensive report from the first round, first year of School-Based Deworming implementation in Sindh, Pakistan

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Prepared by: Evidence Action

For: Sindh, Interactive Research & Development, Indus Health Network

Partners

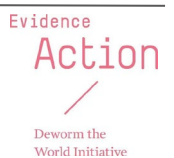


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Glossary

AEO	Area Education Officer
BECS	Basic Education Community Schools
NCHD	National Commission for Human Development
FDE	Federal Directorate of Education
IHN	Indus Health Network
IRD	Interactive Research & Development
MDA	Mass Drug Administration
SBDP	School-Based Deworming Program
STH	Soil-Transmitted Helminths

1.0 Executive Summary

During January 2020, Sindh carried out a pilot round of school-based mass deworming, targeting both enrolled and non-enrolled children, ages 5-14 years (classes 1 - 10). Mass drug administration (MDA) took place in all 6 districts endemic for soil-transmitted helminths (STH), however, only targeting approximately 510,000 enrolled school-age children (SAC) within 2,691 public schools and 414 private schools, as well as 45,000 non-enrolled children. Only a subset of the total at-risk SAC population (4.6 million SAC in need of mass treatment) was targeted in this deworming pilot, and as such the above numbers represent 19% of the total number of enrolled SAC necessitating treatment and 2% of the total non-enrolled.

Evidence Action monitors the key implementation processes before, during, and after each MDA to assess the effectiveness of training and supply chain, adherence to protocols, and treatment coverage to inform program design and improvement. Evidence Action recruited an independent monitoring firm, Markematics (Pvt.) Limited, to collect data from a sample of 35 teacher trainings, 66 schools on Deworming Day, 132 parents of enrolled children targeted by the MDA, and 66 parents of non-enrolled children. In addition, 201 enrolled children were interviewed on Deworming Day at the sample schools, as well as 66 head teachers and 66 teachers who were trained during the teacher trainings to conduct deworming in their respective schools.

On average, 97% of expected schools had a representative in attendance at the teacher training events. All the seven training topics were covered in at least 76% of the training monitored with the topic on roles and responsibilities being covered in all (100%) training sessions. Recording and reporting forms were not covered in 8 (24%) of training sessions. However, the thoroughness of information passed within the training topics varied which had a direct influence on the level of knowledge of the teachers as collected in the pre and post-tests. Read more on training starting on [page 7](#).

Directly following teacher training, 97% (33 out of 34) of the monitored teacher trainings distributed drugs to teachers to take to their respective schools for Deworming Day. As for materials, 94% of trainings distributed reporting forms, 91% distributed teacher training booklets, and 74% distributed banners. Direct observation at schools on Deworming Day and follow-up interviews with the head teachers after the process of drug administration at the schools revealed that all schools (100%) had sufficient drugs to deworm all children present, 82% had Form 1A, 83% had Form 1B, 77% had teacher training booklet, and 65% had banners to display. Read more on drug and material distribution on [page 8 and 19](#).

Overall awareness of Deworming Day among parents was 82%, however, considerably higher among parents of enrolled children (94%) as compared to the parents of non-enrolled children (48%). Only 62% of parents indicated that they would be sending their children for deworming (71% for the parents of enrolled children and 32% for the non-enrolled). Of the parents that said they would not send their

children for deworming, the reasons cited included that they were feeling unwell (67% of parents to non-enrolled, and 28% of parents to enrolled children), with the second major reason (23% and 68%, respectively) being that they did not trust the drug. Enrolled children (57%) and teachers (46%) were the primary sources of Deworming Day information cited by the parents. Read more on community sensitization on [page 16](#).

School observations on Deworming Day revealed that 97% of randomly sampled schools were distributing tablets on Deworming Day. Of the schools that were conducting deworming, observational monitoring revealed that the correct dosage of mebendazole was administered at 98% of schools, and 89% of schools utilized the treatment recording forms (Form 1A, Form 1B). However, interviews conducted with teachers prior to drug administration revealed that 12% were not aware of the drug to be administered. Further, 15% of teachers had not made prior transfers of names from the class register to Form 1A, a gap which could have increased their Deworming Day workload. Read more on drug administration on [page 18](#).

Table 1: Key Performance Indicators

	Public Schools	Private Schools ¹
Target schools represented at teacher training ²	97% (footnote 2)	
Target schools with adequate drugs during deworming	100%	100%
Target school utilizing at least one awareness activity or material	100%	100%
Community members who report seeing or hearing about deworming through IEC deworming materials or word of mouth this round	96%	100%
Target schools distributing tablets on Deworming Day	97%	100%
Enrolled children present in school on Deworming Day	86%	100%

Overall, implementation of this round of school-based deworming in Sindh was successful, highlighted by crucial successes in training such as the majority of participants on time for sessions (87%), high coverage of topics in at least 76% of trainings, a 93% awareness of the MDA, and 97% sampled schools found deworming during the MDA. However, there were also key struggles that should be reviewed and addressed ahead of the next round of MDA, including the low proportion of parents willing to send their children for deworming, improper disposal of drugs in some of the monitored schools, and

¹ Only 1 out of the 66 sampled schools for observation was a private school.

² Disaggregation by school type for training sessions was not available for this round. Overall attendance at the training was 97%.

instances of schools failing to utilize availed treatment forms. The full summary of successes, struggles, and recommendations can be found on [page 22](#).

2.0 Background

Parasitic worm infections, such as soil-transmitted helminthiasis (STH), interfere with children’s nutrient uptake, causing anemia, malnourishment, and impaired mental and physical development³. These conditions pose a serious threat to a child’s health, education, and economic potential. Infected children are often too sick or tired to concentrate in school, or to attend school at all. The World Health Organization (WHO) estimates that over 1.5 billion people are infected globally with STH, with over 860 million children worldwide in need of treatment⁴. A national STH prevalence survey conducted in 2016 found that over 16 million school-age children (5-14 years) in Pakistan are at risk of STH and require regular treatment, with an estimated 4.6 million at-risk school-age children reported in Sindh.

Following a series of consultative meetings, a technical assistance partnership of Interactive Research & Development (IRD), Indus Health Network (IHN), and Evidence Action was established with the aim of providing comprehensive technical assistance to the Sindh administration and federal government to plan, implement and monitor a school-based deworming program.

The goal of school-based deworming is to eliminate worms as a public health problem, and therefore, control the morbidity of STH within school-age children (SAC) living in identified at-risk areas necessitating treatment. The first mass drug administration (MDA) campaign of Sindh’s school-based deworming program was conducted in January 2020, targeting all 6 at-risk districts and a total of 509,995 enrolled children within 2,691 public schools and 414 private schools, as well as 45,00 non-enrolled children.

3.0 Methodology

Process monitoring was conducted for the first wave of deworming by an independent firm (Markematics Pvt. Limited) selected through a competitive bidding process.

To assess the quality of teacher training, as well as the implementation of deworming, Evidence Action randomly selected 34 of the 70 teacher training sessions for observation and training assessment, and 66 of the 3,105 targeted schools (2,691 public and 414 private) for observation and interviews of teachers, children, and parents by independent monitors on Deworming Day. The samples were

³ <https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections>

⁴ http://apps.who.int/neglected_diseases/ntddata/sth/sth.html

distributed across the 6 implementing districts for representation and were calculated to ensure a 90% confidence in the data and allowing up to 10% margin of error.⁵

Parents residing in areas around the selected schools were interviewed on Deworming Day to gauge their level of awareness of the program. At each of the 66 visited schools, monitors targeted 3 parents (198 parents in total) for such interviews, 2 parents of children enrolled at the school and 1 parent of a non-enrolled child (in total, 132 parents of enrolled children and 66 parents of non-enrolled children were found for interview).

On Deworming Day, monitors interviewed head teachers and teachers regarding their plans for deworming, their treatment knowledge, and any sensitization activities they had carried out in schools and local communities. Monitors then observed the drug administration process to verify that the required deworming procedures were followed. After treatment, monitors randomly selected and interviewed one teacher and three enrolled children.

Coverage evaluation surveys, to validate government treatment figures, were not conducted for this round of deworming in Sindh.

Table 2: Targeted and actual sample sizes

Monitoring activity	Total population/ number	Target sample size	Actual sample size
Teacher training sessions	70	35	34
Schools targeted for monitoring on Deworming Day	3,105	66	66
Parents to non-enrolled children interviewed on Deworming Day	-	66	52 ⁶
Parents to enrolled children interviewed on Deworming Day	-	132	146 ⁷
Deworming Day Interviews			
Enrolled children interviewed	-	198	201
Head teachers interviewed		66	66
Teachers interviewed	-	66	66

⁵ A confidence interval of 90% calculates such that if the same population is sampled on several occasions and interval estimates are made on each occasion the resulting intervals would cover the true population parameter in approximately 90% of cases.

⁶ During visits to the community, 14 parents with only non-enrolled children could not be found.

⁷ Monitors interviewed more children than they were mandated to.

4.0 Results

4.1 Review of teacher training

Monitors were dispatched to observe a sample of 34 teachers' training to measure the delivery and effectiveness of teacher training sessions. These training sessions were facilitated by master trainers, who had received prior training facilitated by Evidence Action and IRD. Before the start of the teacher training sessions, the monitors held interviews with the trainers to gauge their preparedness to conduct the training sessions.

The findings indicate that 34 of 34 (100%) trainers interviewed prior to the start of the training had attended a training within 15 days of the teacher training session, with all (100%) indicating that the training made them sufficiently prepared to conduct the day's sessions. The teacher training lasted a day, with each training on average having at least two trainers. At least one official from the education sector was present in all but one training, and a trainer from the health department was present in 5 of the trainings. Trainers indicated that they had used a mix of methods including official letters (68%), Short Message Services – SMS/WhatsApp (56%), and phone calls (21%) to invite participants for the training. Key materials (drugs and reporting forms) were distributed to 22 (71%) trainers, only 28 (82%) of the trainers indicated that the availed materials were sufficient. Stationery was also provided to only 13 (38%) of the trainings.

Following the interviews with trainers, the independent monitors made observations aimed at assessing the teacher training sessions. These form the content of the following sections.

4.1.1. Attendance during trainings

On average, 97% of expected schools had a representative in attendance at the monitored training sessions. In addition, 87% of those in attendance were on time for the teacher training sessions. From the 34 randomly selected and monitored teacher trainings, the use of an attendance register was noted across all (100%) training. In terms of school representation in training, the Deworming Day interviews with head teachers indicated that 92% of interviewed head teachers either attended or sent a teacher to the training, potentially implying that 92% of schools were represented in the training⁸.

4.1.2 Access to training materials

Once training sessions began, monitors observed distribution of all key materials to participants in 90% of training sessions. These key materials (monitoring forms, drugs) are important to aid in conducting teachers' training and be passed onto teachers for use at their respective schools to mobilize, conduct and record mass drug administrations. The teacher training booklet, a critical resource while

⁸ Attendance rates for the teacher trainings cannot be computed as the expected number of participants and schools at the teacher trainings was not captured in the survey

conducting teacher training, was distributed to all participants in 91% of training sessions. Drugs and reporting forms were distributed in 97% and 94% of trainings respectively, while banners were the least distributed in 74% of training sessions (**Figure 1**). Additionally, stationery was availed to all participants in 21% of training sessions. Distribution of drugs, reporting forms, and training booklets was high, however efforts should be made to increase the distribution of all key materials together.

Figure 1: Materials distributed during teacher training (n=34)



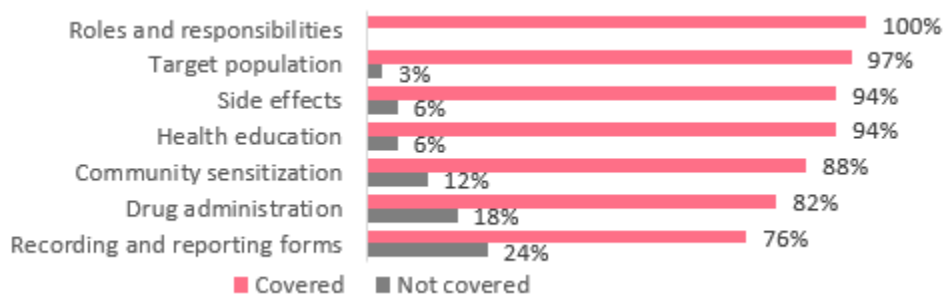
At the training sessions in which drugs were distributed, drugs were provided to teachers in different forms: at least some sealed original containers were distributed in 74% of trainings, and to account for schools with small student populations, some sessions distributed not in original tins (9%), and unsealed original containers (3%).

4.1.3 Topic coverage

Training sessions were also monitored to assess training topic coverage during the teacher trainings, with trainers required to cover a total of seven topics. These included the target population, health education, drug administration, side effects, recording and reporting forms, the roles and responsibilities of the various actors on Deworming Day, and community sensitization.

All the seven topics were covered in at least 76% of the trainings monitored with topics on roles and responsibilities being covered in all (100%) trainings (**Figure 2**). A key concern is that community sensitization, drug administration, and recording and reporting forms were covered in fewer than 90% of training sessions.

Figure 2: Coverage of topics during trainings (n=34)



To gauge the effectiveness of the teacher training sessions in terms of knowledge transfer, a sample of 136 participants spread across the training venues was selected for both pre- and post-training interviews. It should be noted that the same set of participants that undertook the pre-interviews also

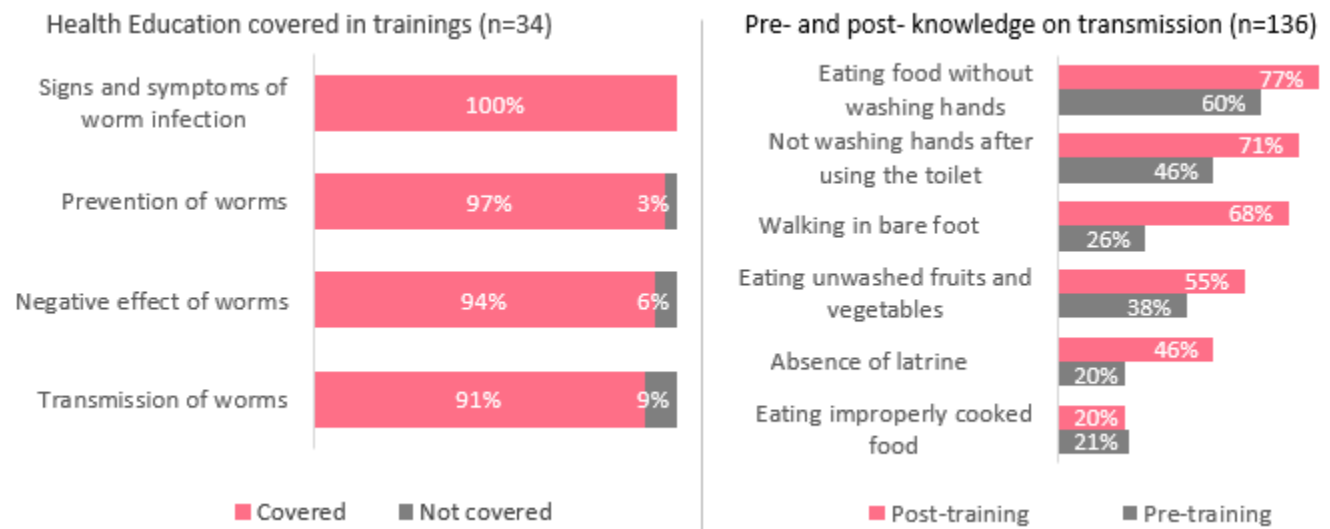
were represented in the post-training interviews. For the majority of the aforementioned topics, monitors assessed coverage of individual messages as well as gauged participants' pre- and post-training knowledge levels as a proxy for determining the effectiveness of the training sessions.

The findings are presented below:

4.1.3.1 Health Education

Four messages were covered under the topic of health education. From monitor observations, the message on signs and symptoms of worm infection was covered in all (100%) trainings monitored, while prevention, negative effects, and transmission of worms were covered in at least 91% of the trainings monitored (**Figure 3**).

Figure 3: Health education covered in trainings and pre- and post-training knowledge



Post-training interviews with participants revealed that all (100%) of those interviewed could cite at least one way a person gets infected with worms. Eating food with unwashed hands (77%), not washing hands after using the toilet (71%) and walking barefoot (68%) were the most cited means of worm infection in the post-interviews conducted.

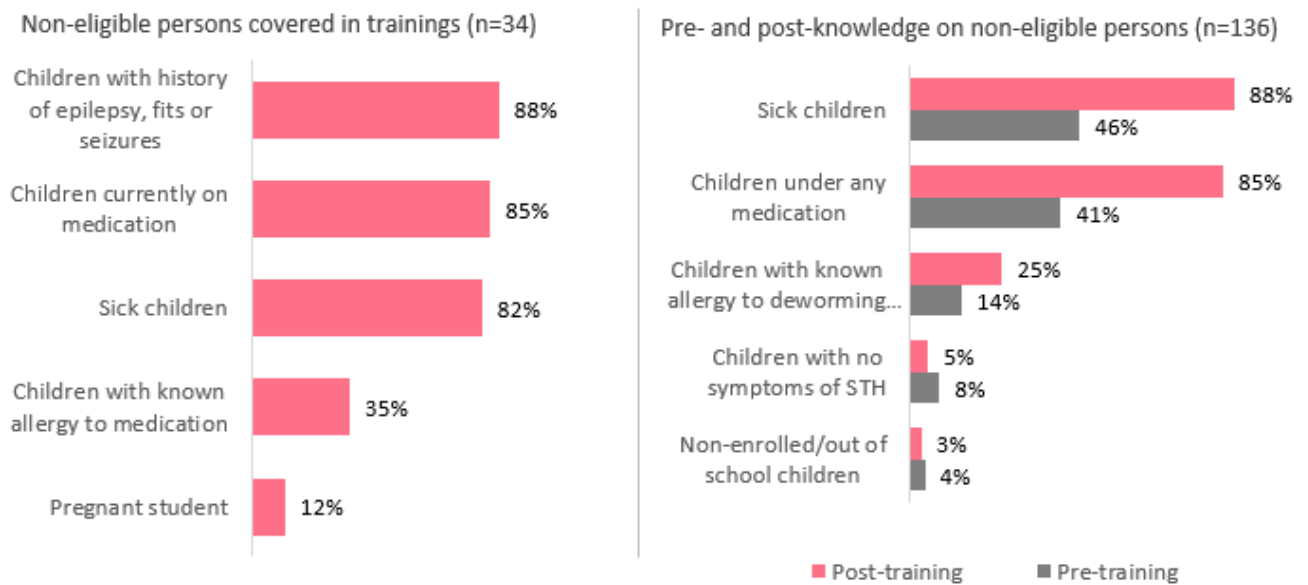
4.1.3.2 Target Population

Proper identification of the target group is critical in meeting the program target of treating all eligible at-risk persons. Ninety-seven percent of trainers highlighted that both the enrolled and non-enrolled children; aged 5-14 years formed the target group for this deworming round. The Sindh deworming date was also echoed in all (100%) of the trainings monitored.

Equally critical to program success is the identification of the non-eligible individuals. The most described groups were noted for children currently on any medication, children with a history of epilepsy, fits, or seizures, as well as sick children on Deworming Day (**Figure 4**).

During post-training interviews, monitors noted considerable increases in the proportion of participants citing children who are under medication (up 44 percentage points) as well as those who are sick as non-eligible (up 42 percentage points). Also noteworthy are the drops in the proportions of teachers indicating that they would not provide drugs to children not enrolled in school or those without STH symptoms (Figure 4).

Figure 4: Non-eligible persons covered in trainings and pre- and post-training knowledge

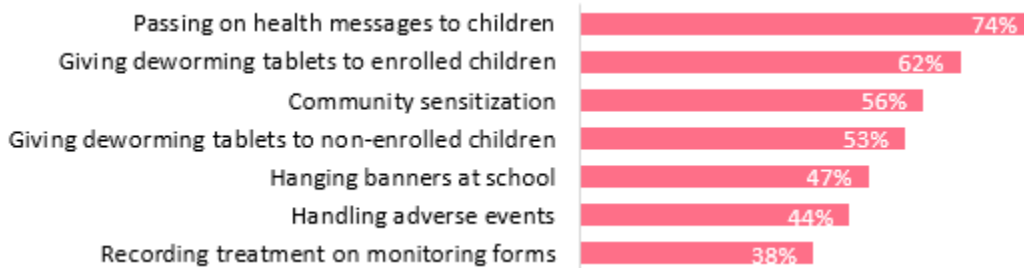


However, 75% of teachers are still likely to provide deworming drugs to children with known allergies and 12% are still likely to provide deworming drugs to sick children, and the program should focus on addressing both in future trainings.

4.1.3.3 Roles and Responsibilities

The success of the MDA hinges on proper identification of the contribution of various actors and the roles they play in the exercise. The roles and responsibilities of teachers were covered by trainers in all (100%) of monitored training sessions. However, key responsibilities were not mentioned consistently or fully.

Figure 5: Teacher roles and responsibilities covered by trainers in teacher trainings (n=34)



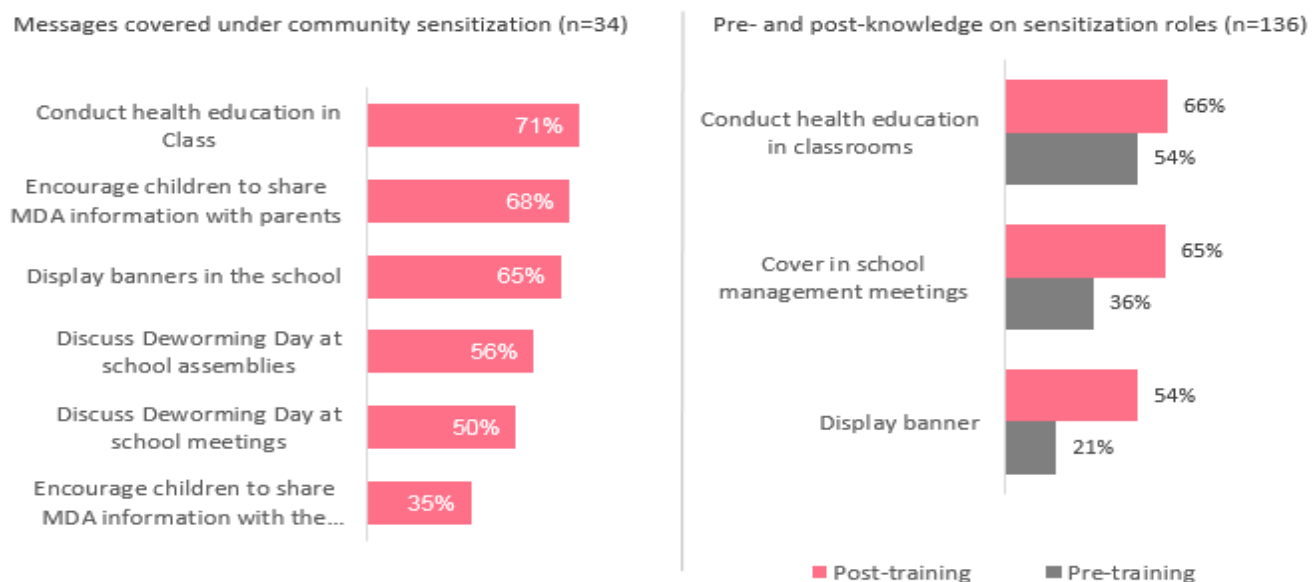
From monitor observations, messages centered on passing on health messages to children prior to deworming and the provision of tablets to enrolled children and community sensitization (74%, 62% and 56%, respectively) received the most attention (**Figure 5**). However, information on provision of tablets to non-enrolled, handling adverse events, and reporting forms were covered in at most 53% of observed training sessions.

4.1.3.4 School Sensitization

Raising awareness of the MDA within the target geographic area and population is pivotal to the achievement of the target therapeutic coverage of at least 75% of the at-risk population. However, since only 19% of the total SAC population was targeted for deworming, independent monitoring is measuring effectiveness of the sensitization strategy for scale up in subsequent rounds of MDA.

Monitors noted that 88% of trainers indicated to teachers that deworming sensitization was an activity they had to conduct in their respective school prior to deworming. In terms of actual roles, conducting health education in class (71%), encouraging children to share MDA information with parents (68%), displaying banners at schools (65%) were the most mentioned. However, none of the individual topics were mentioned in more than 71% of training sessions. Given that sensitization is crucial to Deworming Day success, trainers should be encouraged to make use of these opportunities to convey roles and responsibilities as well as how to deliver messages about mobilization and sensitization activities (**Figure 6**).

Figure 6: Teacher sensitization roles and participants' pre- and post-knowledge



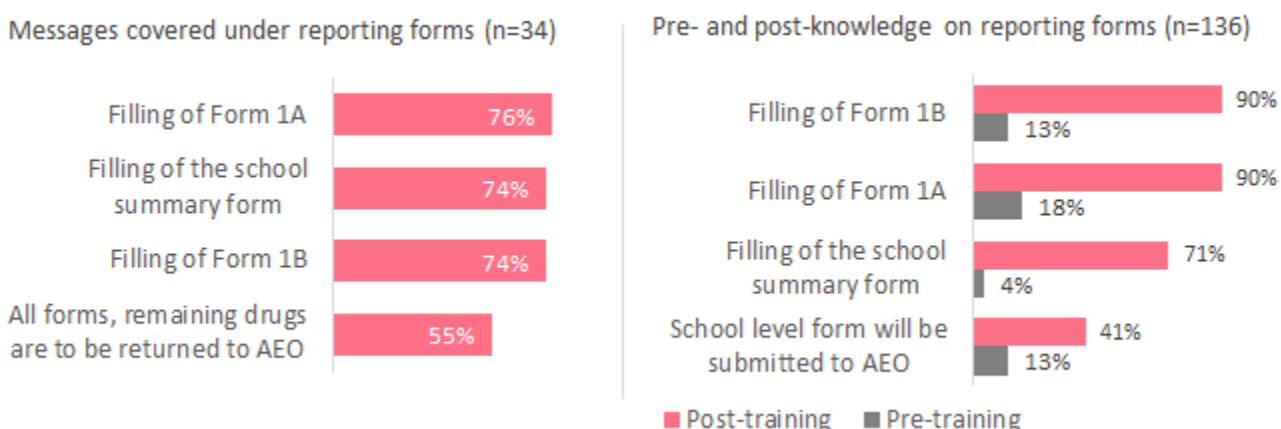
During post-training interviews, there were increases from pre-training knowledge in all messages of sensitization. However, even after the increase, only 66% of teachers understand that it is their responsibility to conduct deworming health education in classrooms prior to MDA and only 45% of teachers knew to discuss the upcoming MDA in school management meetings (Figure 6). The most cited key messages that teachers indicated they would share with the school community as revealed from post-training interviews were that drugs are free (74%), that the target children are aged 5-14 years (66%), that there was one Deworming Day for the whole of Sindh (60%), and that the tablets are safe (57%).

4.1.3.5 Recording and reporting forms

During MDA, teachers are required to fill out three forms including Form 1A (to record treatment of the enrolled children), Form 1B (to record treatment of the non-enrolled), and the school summary form, which are crucial to calculating coverage and program success. Trainers are also required to inform teachers that all forms as well as any remaining drugs post-MDA are to be returned to the Area Education Officer (AEO) and Directorate of Basic Education Community Schools (BECS).

Based on monitor observations, only 55% of all trainers covered all aspects of recording and reporting forms, though at least 74% did cover filling of all forms: 1A, 1B, and 2 (Figure 7). While a quarter of trainers did not highlight the filling of Form 1A or 1B, 90% of participants correctly identified the purpose of these forms as recording treatment for enrolled and non-enrolled children, respectively, in post-training interviews.

Figure 7: Messages covered under reporting forms and participants' pre- and post-training interview



From post-training interviews, the proportion of teachers knowledgeable as regards the correct target group for use of Forms 1A and 1B was high at 90%, increases of 72 and 77 percentage points, respectively. Monitors noted that 11% of respondents did not know that Forms 1A and 1B would feed into the school summary form. However, only 71% of participants knew the purpose and content of Form 2, and only 41% could identify the recipient of Form 2. Given the critical nature of reporting forms for correctly recording and aggregating treatment coverage, trainers should ensure full coverage of these topics during future trainings to ensure that the cascade process is well covered.

4.1.3.6 Drug Administration

Based on monitors' observations, messages on drug administration generally received excellent coverage with all topics being covered in at least 71% of trainings monitored (Table 3).

Table 3: Messages on drug administration covered in teacher trainings (n=34)

	Percent
STH drug is Mebendazole	100%
Complete class level summary form as the child is treated	97%
One Mebendazole Tablet to be given to each child	97%
For non-enrolled children use Form 1B to record treatment	97%
Under the program, all drugs are free, safe and effective	94%
Check child's mouth to make sure that each child chews and swallows the tablet	88%
Names of all enrolled children need to be copied from the class register on to class level summary.	88%
Drugs must be stored in a clean, safe, dry and cool location	71%

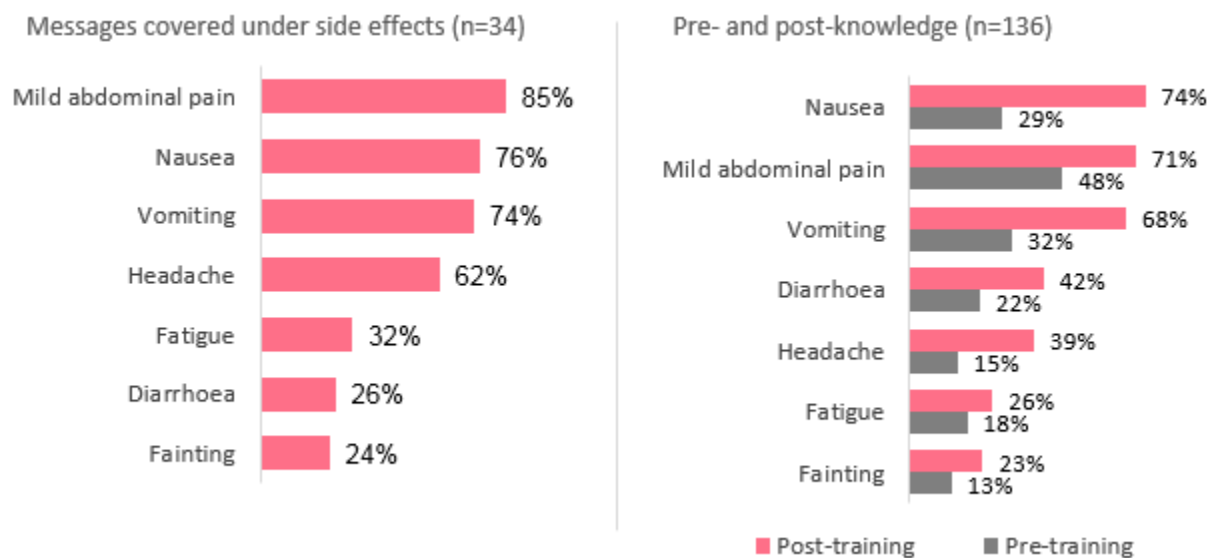
4.1.3.7 Side Effects

Side effects are potential outcomes of any treatment that may or may not be directly related to the treatment being provided. To ensure that teachers were effectively equipped to handle any such cases, trainers were required to provide information on possible side effects and how to handle them. In 68%

of training sessions, the trainers provided teachers with the relevant health officer contact information to help with potential side effects. Mild abdominal pain, nausea and vomiting were covered in 74% or more of the trainings, while fatigue, diarrhoea and fainting were only covered in less than half of trainings monitored (**Figure 8**).

The proportion of participants that could cite at least one side effect was 99% in the post-training, with nausea (74%) being the most cited side effect in post-training interviews, followed by mild abdominal pain (71%) and vomiting (68%). However, few teachers cited other side effects such as diarrhoea (42%), headache (39%), fatigue (26%), and fainting (23%) during post-training interviews.

Figure 8: Messages on side effects and participants' pre- and post-knowledge on side effects



In terms of managing any children with side effects, the majority of teachers in post-training interviews cited giving reassurance to any affected child that their symptoms will likely pass quickly (63%) as well as taking the child to an open and shaded area to allow him/her lie down (51%). In the event of any serious or persistent adverse effect lasting more than 2 hours, 64% of participants from the post-training interviews cited that they would take the children to the nearest health facility (an 18 percentage point increase), a finding in line with the recommended practice in the event of any such cases.

4.1.4 Training Feedback

In a bid to improve future training, monitors sought feedback from participants as regards the overall training rating as well as potential areas for improvement. On a 1-5 scale (1 implying so bad, 5 implying very good), both the overall training as well as the trainers were given a 4.4 and 4.5 rating, respectively. In addition, the organization of the training session, including invitation, preparation, and distribution had an average rating of 4.1. Conclusively, it can be said that participants thought that the trainings were good.

4.2 Community Sensitization

Community sensitization prior to conducting the Deworming Day is an evidenced key ingredient for MDA success. On Deworming Day, monitors held interviews with 146 parents of enrolled and 52 parents of non-enrolled children. Key to this interview was to gauge awareness of the upcoming MDA, as well as their sources of information for the MDA. At the end of the interviews, monitors also sought to determine what proportion of parents would be sending their children for deworming as a proxy for the effectiveness of the sensitization efforts.

4.2.1 Parent Demographics

By gender, there was a close split (45% male and 55% female) for parents of children taking part in deworming. In terms of primary occupation, the majority of parents indicated that they were stay-at-home parents (42%), followed by those running small businesses (26%). These proportions (primary occupation) were similar across both sets of enrolled and non-enrolled parents. Both sets of parents also had an average of 2 children in the target group (5-15 years). The average age of children in the households was 9 years.

Thirty-three percent of parents reported that secondary school was the highest level of education they had achieved, with a higher proportion among the parents of the enrolled (38%) as compared to 17% among those for non-enrolled children. Thirty-two percent of parents reported that they had not achieved any level of schooling, 25% had completed primary school, 6% indicated that university was their highest level of education, 4% had obtained a diploma, and 2% for those that had a certificate.

4.2.2 Parents knowledge on deworming

Eighty-two percent of parents interviewed on Deworming Day were aware of deworming happening within their communities, with this proportion higher among parents of the enrolled children (94%) as compared to their non-enrolled counterparts (48%).

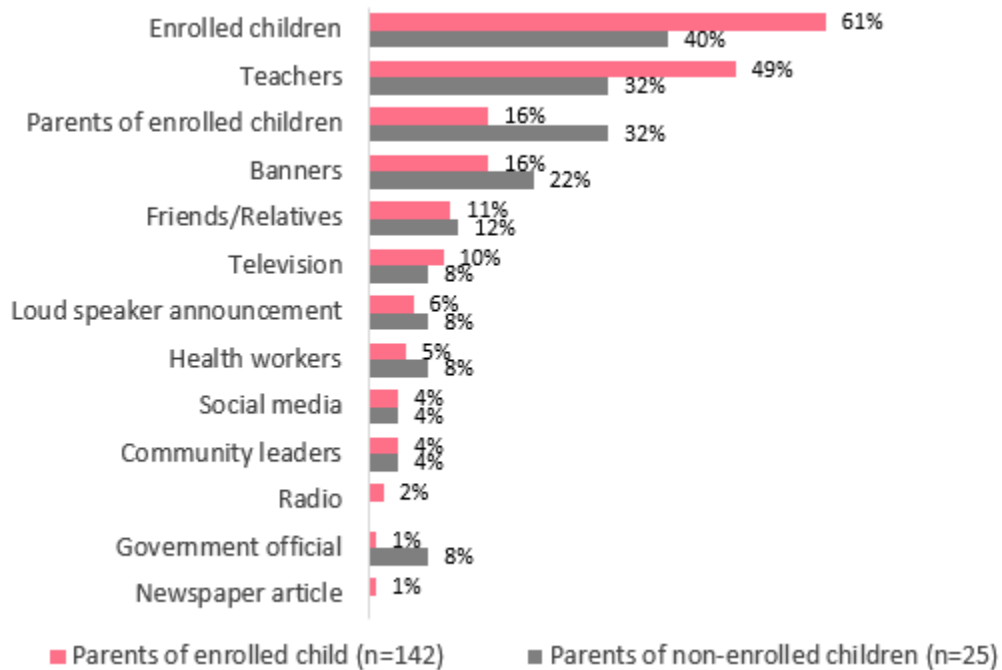
Monitors posed further questions to parents that were aware of the upcoming MDA as regards their knowledge of the date of deworming, target age group and what the treatment was for. This information is embedded in the various sensitization sources.

Among parents who were aware of the Deworming Day (82% of parents), 96% knew the correct deworming date, albeit higher among the parents of the enrolled children (99%) compared to only 80% among those for the non-enrolled children. Parental knowledge of the purpose of medicines as treating worms was high (overall proportion at 91%; 95% for parents of enrolled children and 76% for parents of non-enrolled children). But the proportion of parents knowledgeable as regards the target age-group of 5-14 years was lower, noted to stand at 74%, with 76% of the parents of enrolled children and 65% for the non-enrolled children. Emphasizing the target population with the purpose and date is critical for program success.

4.2.3 Sources of Deworming Day information

Enrolled children and teachers were the main sources of information about deworming among both parents to enrolled (61% and 49% respectively) as well as parents to non-enrolled children (40% and 32% respectively) - **Figure 9**.

Figure 9: Medium of sensitization as cited by both sets of parents

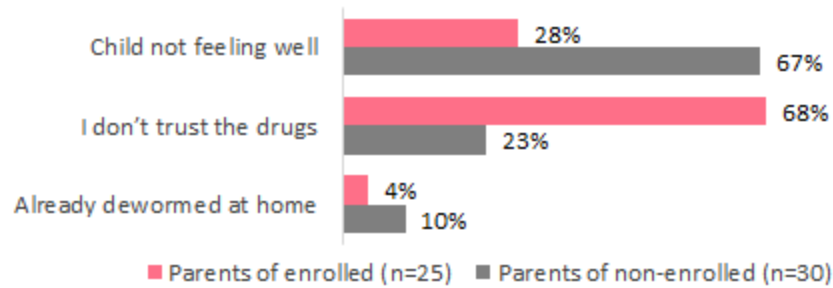


Teachers (39%), enrolled children (38%), health workers (21%), and parents of enrolled children (20%) were the most preferred means of receiving information on future deworming activities by all parents, while parents of non-enrolled children also cited that they'd prefer information through televised announcements (25%) and friends/relatives (23%). Subsequent sensitization plans should leverage these findings, as they are in line with the parents' preferred means of receiving future deworming information.

4.3.4 Parents' reasons for not sending children for deworming

Even though 82% of parents were aware of deworming, only 62% of parents interviewed by monitors indicated that they would send at least one of their children for deworming, with this proportion at only 71% for the parents of the enrolled children and 32% for the non-enrolled children. The majority of the parents (57% for enrolled and 18% for the non-enrolled) who indicated that they would not be sending any of their children for deworming indicated that the children were either unwell or didn't trust the drugs (**Figure 10**).

Figure 10: Reasons cited by parents for not sending children for deworming



4.3 Deworming Day assessment

A sample of 66 schools were randomly-selected for monitoring on Deworming Day. The purpose of these visits was to assess if deworming was being conducted at the schools, and if so, to assess the knowledge and capacity of teachers to administer tablets and observe if the proper procedures were being followed. Of the 66 randomly-selected schools, monitors visits revealed that all (100%) were conducting deworming activities on Deworming Day, and full observation monitoring was completed at all of these 66 schools.

Further findings also indicated that 88% of schools had made plans to deworm any non-enrolled children present on Deworming Day, with non-enrolled children noted in 42% of schools monitored.

4.3.1 Knowledge of deworming information

Ninety-two percent (92%) of head teachers interviewed on Deworming Day indicated that either they (73%) or another teacher (20%) had attended a training session in preparation for Deworming Day within 15 days of the MDA. A follow-up interview with the teachers also revealed that 68% of them had either attended the training or been sensitized within the school on how to administer deworming drugs.

Eighty-nine percent (89%) of head teachers interviewed knew the correct age group for STH treatment to be between 5-14 years with a similar proportion of teachers being knowledgeable on the same. Knowledge of the correct drug for treatment being mebendazole was slightly high among head teachers (89%) as compared to teachers (88%), while 95% of teachers and 97% of head teachers knew the correct drug dosage of one tablet per child. The relatively low knowledge of the correct age group and drug to be administered should be flagged and training materials and information rechecked for inclusivity and clarity.

4.3.2 Adherence to MDA procedures

To provide quality assurance of the MDA administration, monitors observed whether deworming teams adhered to key drug administration steps. Results show relatively high levels of compliance with the recommended practices as passed on during the trainings (**Table 4**). Over half of the teachers dewormed children within the classrooms (53%), 45% of teachers set up central deworming stations, while the other 2% dewormed children in the principal's office. In terms of manning the deworming stations, schools adopted various approaches, with one or more teachers manning a centralized area in

most schools (53%) and a single teacher conducting the activity from class-to-class (27%) in some others. A few teachers going from class-to-class (11%), each teacher deworming their own class (8%), and conducting deworming during assembly (2%) made up the remaining observations.

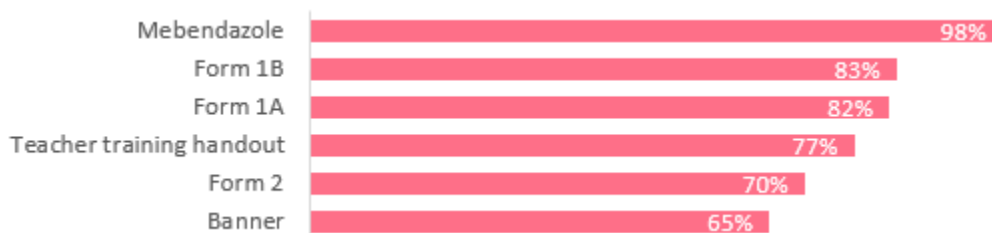
Table 4: MDA procedures observed by monitors during drug administration (n=66)

MDA practice	Percent
The child was given one mebendazole tablet	98%
The teacher used Forms 1A and 1B to record treatments	89%
The teacher had transferred names from the class register to Form 1A	85%
The teacher marked Form 1A and Form 1B as treatment was being administered	82%
There was a designated teacher to treat the non-enrolled children	48%
Spoilt drugs (those that fell on the floor, were spat out as well as had water spills) were thrown away (n=15)	33%

In only 1 case, were teachers observed to give more than one mebendazole tablet to a child (2%), while 82% of teachers used the correct forms to record treatments as they occurred. However, 2 of the 12 teachers that did not fill the forms during administration were observed to tick off all children before or after deworming. In 85% of cases, teachers were observed to have transferred the names from the class register to Form 1A before the deworming exercise began. In 48% of observed schools, the schools had designated a teacher for the treatment of non-enrolled, and it is positive to note that non-enrolled children were treated in 42% of schools, though perhaps this rate would rise with more schools planning for non-enrolled children.

The availability of key materials for deworming is one of the backbones for a successful MDA. Availability of drugs and the primary monitoring forms (Form 1A and 1B) was generally high (**Figure 11**).

Figure 11: Materials available on MDA as observed by monitors (n=66)



On the other hand, banners, in spite of distribution to 74% of trainings, these were only observed on display at 65% of schools monitored on Deworming Day. The same findings apply to the teacher training handout, which was distributed in 91% of trainings monitored, but available in only 77% of schools. On the premise of this, the importance of using the materials prior to and during deworming at schools

needs to be emphasized in training sessions, along with identification of any specific logistical challenges.

From interviewing head teachers at the schools prior to the drug administration process, 100% of schools had drugs available; follow-up interviews with the head teachers after the process of drug administration at the schools revealed that all schools (100%) had sufficient drugs to deworm all children present.

4.3.3 Management of side effects

Monitors conducted interviews with 52 medical officers and/or Union Council Medical Officers (UCMO) to determine if they encountered any calls for assistance as regards helping teachers with management of severe adverse effects. Thirty-two health officers (62%) reported that they were contacted by teachers regarding the deworming program, with 69% of those calls regarding side effects management.

Two observations of incidences of severe adverse events were reported for this deworming round. Head teachers also reported a low incidence of only 5 (8%) of mild adverse events. This underlines the already highlighted need for trainers to comprehensively cover all side effects during training, as well as share contacts of the medical officers able to professionally aid in the event of any observed occurrence.

4.3.4 Water, Sanitation and Hygiene

During school visits, monitors also took note of school structures, and the presence of latrines and handwashing facilities within the schools. In terms of school structures, the majority of schools had their roofs made of concrete (94%), which was also the main material used on the school building walls (95%). Most of the school floors were made of concrete (82%), while some of the floors were made of tiles/marble (12%). Fourteen schools (21%) lacked any hand washing facilities, while 11% had facilities with only water, and 29% had facilities with soap and water. In addition, all but five schools (92%) also had latrines. On average, observed schools had 3 latrines for boys and 3 for girls. Among these, the pit latrine with slab was most common (45%); followed by those without a slab (5%).

5.0 Conclusion

What worked well

1. The overall execution of the training was generally good. All of the trainers were trained within 15 days prior to the teacher training sessions, with all of them indicating that they were sufficiently prepared to conduct the teacher training. Majority of participants were on time (87%), they also had positive overall feedback on training sessions in the areas of preparation,

trainers, and the sessions itself. All topics received a coverage of at least 75% across the trainings.

2. In general, community members were well sensitized to the deworming activities, based on interviews in the community on Deworming Day with 82% of community members interviewed being aware of Deworming Day activities. Teachers and enrolled students were the most common source of information and were also the most preferred source by parents. These two cost-effective approaches should be cascaded in future rounds.
3. Direct observation at schools on Deworming Day and follow-up interviews with the head teachers after the process of drug administration at the schools revealed that all schools (100%) had sufficient drugs to deworm all children present.
4. Majority of the schools that were visited on Deworming Day (97%) were observed to be conducting deworming, and adherence key MDA procedures was good, with the correct dosage provided to most children at 98% of schools and correct reporting forms used for treatment in 89% of schools, pointing to a successful Deworming Day. In addition, 88% of schools had plans in place to deworm non-enrolled students, and 42% of schools were observed to deworm non-enrolled students; both commendable given this was the first round in Sindh, albeit with room for improvement in subsequent rounds.

What needs to improve (recommendations)

1. While overall timely attendance by training participants was at 87%, the noted gap presents an avenue for the program to review and enhance the methods of communication with all stakeholders and encourage head teachers to promptly request teachers to make necessary preparations to attend the training.
2. Awareness of Deworming Day was 82% among all parents interviewed, however only 48% of parents of non-enrolled children were aware as compared to parents of enrolled (94%). Additionally, only 32% of parents of non-enrolled children indicated that they would send their children for deworming. The program should leverage on the preferred means of receiving information so as to increase awareness, which include timing and content in televised announcements.
3. Some practices observed during MDA need to be addressed during future teacher trainings:
 - a. Reporting forms – though most (at least 94%) schools had reporting forms, 11% of schools did not utilize them. Post-deworming findings also showed that 33% of head teachers did not know who to give schools summary forms. This calls for emphasis during trainings on the importance of using program forms in determining coverage, as well as the reverse cascade for materials and forms.
 - b. Spoilt drugs – were not properly disposed in 67% of schools observed. Trainers should highlight the importance of proper drug disposal in the fight against worms in the next deworming round.
 - c. Having a designated teacher to treat non-enrolled children, noted in only 48% of schools could translate to more non-enrolled children being treated in schools.

Schools should make prior arrangements to deworm non-enrolled children in future rounds.

- d. Administering of more than one mebendazole tablet was observed in 2% (1 out of 66) schools monitored during Deworming Day. This points to the 3% of the teacher trainings that did not cover this message under drug administration - a gap which needs to be closed out as improper dosing may have challenges on the efficacy of drugs.
4. On Deworming Day, efforts should be made to ensure that teachers are fully prepared to conduct the activities. Interviews with teachers (not including head teachers) indicated that only 68% had either attended a training or been sensitized by a teacher that did attend training for drug administration on Deworming Day. Further, 11% of interviewed teachers could not correctly identify the eligible age group for deworming treatment. Preparation for the important tasks in carrying out Deworming Day would be a key priority for the program to ensure proper treatment and success.

Recommendations for the next monitoring round

1. Recheck pre- and post-training knowledge assessment questions within the surveys to see whether these can be strengthened to measure the transfer of key training objectives and outputs better.
2. During the post-training interviews with teachers and trainers, add questions to surveys to collect ways in which the training cascade can be improved.
3. Recheck surveys for questions that necessitate prompting, i.e. how community members heard about deworming.
4. Prior to the next round of independent monitoring, recheck survey questions pertaining to the reverse cascade and align with the strategy for the reverse cascade as in the operational plan. Furthermore, training materials need to be aligned with specific plans for reverse cascade as in the operational plan as well.
5. Contextualize community and school sensitization questions within surveys prior each round of independent monitoring using the finalized Sindh communication strategy and plans for sensitization within the operational plan.