Deworm the World Initiative - Pakistan

A comprehensive report from the first round of school-based deworming implementation in Khyber Pakhtunkhwa (KP), Pakistan

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Prepared by: Evidence Action

For: Khyber Pakhtunkhwa, 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
ICT	Islamabad Capital Territory
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 October 2019, Khyber Pakhtunkhwa (KP) carried out its first round of school-based deworming targeting both enrolled and non-enrolled children, ages 5-14 years (classes 1-10). Mass drug administration (MDA) took place in 19 districts endemic for soil-transmitted helminths (STH), targeting 4.6 million enrolled school-age children (SAC) within 16,384 public schools and 4,887 private schools.[1] Non-enrolled children across all 19 targeted districts were mobilized to access free deworming treatment at a nearby school on Deworming Day. However, due to lack of data, exact numbers of non-enrolled children targeted could not be identified.

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, Ipsos, to collect data from a sample of 62 teacher trainings, 68 schools on Deworming Day, 136 parents of enrolled children targeted by the MDA, and 68 parents of non-enrolled children. In addition, 204 enrolled children were interviewed on Deworming Day at the sample schools, as well as 68 headteachers and 68 teachers who were trained during the teacher trainings to conduct deworming in their respective schools. Following Deworming Day, 3,382 children were interviewed from 60 sampled communities and the nearest schools in two districts for coverage validation.

On average, 83% of expected schools had a representative in attendance at the teacher training events, with rates of 88% for public schools and 48% for private schools. Not being invited or aware of the training and being represented by a teacher from another school were the most commonly cited reasons (50% each) provided by schools that did not attend the training. All seven training topics were covered in at least 87% of the training monitored with topics on side effects, the target population, and roles and responsibilities being covered in all (100%) trainings. Drug administration was not covered in 8 (13%) of training sessions. However, the thoroughness of information passed within the training topics

[1] 68% of the total at-risk SAC population due to difficulty accessing all private and religious schools in the first year of implementation

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 10**.

Directly following teacher training, 82% of training sessions distributed all key materials to all participants. 95% (59 out of 62) of the monitored teacher trainings distributed drugs to teachers to take to their respective schools for Deworming Day. As for materials, 89% of training distributed reporting forms, 85% distributed teacher training booklets, and 68% distributed banners. However, 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, 84% had Form 1A, 59% had teacher training booklets and 53% had banners to display. Read more on drug and material distribution on **page 11 and 22**.

Overall awareness of Deworming Day among parents was 88%, however, higher among parents of enrolled children (90%) as compared to the parents of non-enrolled children (78%). 72% of parents indicated that they would be sending their children for deworming (77% for the parents of enrolled children and 29% for the non-enrolled). Of the parents that said they would not send their children for deworming, the majority (41% for enrolled and 40% for non-enrolled) indicated that they would not be sending their children for deworming because they were feeling unwell, with the second major reason (25% and 20%, respectively) being that they did not trust the drugs. The main source of Deworming Day information cited by parents of both enrolled and non-enrolled children was through enrolled children themselves (62% and 53%, respectively), with teachers mentioned as the second main source of information (54% and 26%, respectively). Read more on community sensitization on **page 19**.

The rate at which schools conducted deworming was high, with all randomly selected schools (100%) distributing tablets on deworming day. Results show high levels of compliance with recommended MDA administration practices as passed on during the trainings. 91% if the schools administered one mebendazole tablet per child (6 cases, teachers were observed to give more than one tablet per child). Teachers used Forms 1A and 1B to record treatments in 97% of the observed schools, with 88% marking said forms as treatment was being administered. There was a designated teacher to treat non-enrolled children in 56% of the schools. However, observations indicated that non-enrolled children were dewormed in 35% of monitored schools. Read more on drug administration on **page 22**.

Coverage validation surveys were conducted within 6 weeks of MDA treatment within two randomly selected districts (Peshawar and Buner) to estimate the program reach and surveyed coverage in comparison to results reported by schools. From coverage evaluation surveys, the overall proportion of targeted children interviewed that were offered the drug (program reach) was 97% in Peshawar and 98% in Buner, while the proportion of targeted children that swallowed the drug (surveyed coverage) was 74% in Peshawar and 90% in Buner. Adjusting for the fact that the program targeted only a 68%[2] of the overall at-risk SAC population in KP, the 74% and 90% surveyed coverage rates of targeted SAC therefore indicate that 43% and 68% of the total at-risk SAC population swallowed the drug in Peshawar and Buner, respectively. While the CES was only conducted in two districts, and therefore not representative of the entire province, we can infer that the overall surveyed coverage was found to be below the WHO therapeutic coverage threshold of 75%. However, the overall surveyed coverage was near to or reaching the Y1 program target of 50% therapeutic coverage. Read more on coverage validation on **page 26**.

	Public Schools	**Private Schools**
Target schools represented at teacher training	88%	48%
Target schools with adequate drugs during deworming	100%	100%
Target school utilizing at least one awareness activity of material	66%	100%
Community members who report seeing or hearing about deworming through IEC deworming materials or word of mouth this round	90%	89%
Target schools distributing tablets on Deworming Day	100%	100%
Enrolled children present in school on Deworming Day	77%	89%
	Peshawar	**Buner**
Targeted children who report receiving unprogrammed deworming in the last six months	1%	2%
Target population validated as swallowing deworming tablets on NDD	74%	90%

[2] Overall, 68% of of SAC in KP were targeted (4.6 out of 6.8 million); in Peshawar 58% of SAC were targeted and in Buner 75% of SAC were targeted for deworming treatment.

based on Coverage Validation[3]		

Overall, implementation of the first round of school-based deworming in KP was successful, highlighted by crucial successes in training with 87% topic coverage and positive training feedback, community awareness with 88% of community members aware of deworming, and implementation of Deworming Day with all observed schools distributing drugs. However, there were also key struggles that should be reviewed and addressed ahead of the next round of MDA, including private school training attendance, material distribution, reverse cascade planning, specific areas of training coverage, use of social media for community sensitization, and treatment data aggregation. The full summary of successes, struggles, and recommendations can be found on **page 30**.

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 development[4]. 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 treatment[5]. A national STH prevalence survey conducted in 2016 found that over 16 million school-age children (5-15 years) in Pakistan are at risk of STH and require regular treatment, with an estimated 6.8 million at-risk school-age children reported in Khyber Pakhtunkhwa (KP).

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

[3] In KP Round 1 of 2020, CV was only conducted in two districts: Peshawar and Buner.

[4] https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections

[5] http://apps.who.int/neglected_diseases/ntddata/sth/sth.html

of providing comprehensive technical assistance to the KP 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 KP's school-based deworming program was conducted in October 2019, targeting 19 at-risk districts and a total of 4.6 million enrolled children within 16,384 public schools and 4,887 private schools. Non-enrolled children were also mobilized to access free deworming treatment at a nearby school on Deworming Day. Due to lack of data, exact numbers of non-enrolled children targeted could not be identified.

3.0 Methodology

Process monitoring and coverage validation was conducted for the first wave of deworming by an independent firm (Ipsos), selected through a competitive bidding process.

To assess the quality of teacher training, as well as the implementation of deworming, Evidence Action randomly selected 62 of the 683 teacher training sessions for observation and training assessment, and 68 of the 21,271 targeted schools (57 public and 11 private) for observation and interviews of teachers, children, and parents by independent monitors on Deworming Day. The samples were distributed across the 16 implementing districts for representation and were calculated to ensure a 90% confidence in the data and allowing up to 10% margin of error.[6]

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 68 visited schools, monitors targeted 3 parents (204 parents in total) for such interviews, 2 parents of children enrolled at the school and 1 parent of a non-enrolled child (in total, 136 parents of enrolled children and 68 parents of non-enrolled children were found for interview).

[6] 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.

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.

A few weeks after the MDA, monitors conducted coverage validation with the aim of determining the program reach and surveyed coverage and followed WHO guidelines while conducting the survey in schools and communities.

Table 1: Targeted and actual sample sizes

Monitoring activity	Total population/ number	Target sample size	Actual sample size
Teacher training sessions	683	62	62
Schools targeted for monitoring on Deworming Day	19,540	68	68
Parents to non-enrolled children interviewed on Deworming Day	-	68	23[7]
Parents to enrolled children interviewed on Deworming Day	-	136	181
Deworming Day Interviews			
Enrolled children interviewed	-	204	204
Head teachers interviewed		68	68
Teachers interviewed	-	68	68
Coverage Validation			
Number of children interviewed	-	3,382	3,416

4.0 Results

4.1 Teacher Training

Monitors were dispatched to observe a sample of 62 teachers' training to measure the delivery and effectiveness of teacher training sessions. These trainings were facilitated by master trainers, who had received prior training facilitated by Evidence Action and IRD. Prior to the start of the teacher training sessions, the monitors held interviews with the trainers to gauge their preparedness to conduct the training sessions.

[7] During visits to the community, only 23 parents of non-enrolled children were able to be found.

The findings indicate that 62 of 62 (100%) trainers interviewed prior to the start of the trainings had attended a training within 15 days of the teacher training session, with 61 (98%) indicating that the training made them sufficiently prepared to conduct the day's sessions. The teacher trainings 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 1 of the trainings. Trainers indicated that they had used a mix of methods including Short Message Services – SMS (77%), phone calls (63%) and official memos (27%) to invite participants for the trainings. While key materials (training booklets, reporting forms, drugs and banners) were distributed to all trainers, only 48 (77%) of the trainers indicated that the availed materials were sufficient. Stationery was also provided to 56 (90%) of the trainers.

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

From the 62 randomly selected and monitored teacher trainings, the use of an attendance register was noted across 59 (95%) trainings visited. In terms of school representation in training, the Deworming Day interviews with head teachers indicated that 97% of interviewed head teachers either attended or sent a teacher to the training, potentially implying that 97% of schools were represented in the training.

From monitoring attendance records at the training sessions, on average 83% of expected schools had a representative in attendance, with rates of 88% for public schools and 48% for private schools. In addition, 86% of those in attendance were on time for the teacher training sessions.

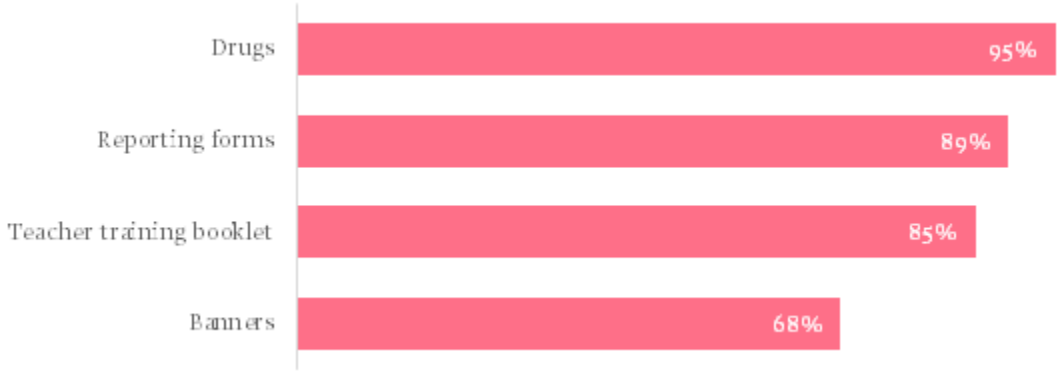
4.1.2 Access to training materials

From the master trainer sessions, all trainers reported receiving the necessary key materials (training booklets, monitoring forms, drugs, posters and banners) to aid in conducting teachers' training and be passed onto teachers as they conduct the teacher training sessions.

From monitor observations, 82% of training sessions distributed all key materials to all participants. The teacher training booklet, a critical resource while conducting teacher trainings, was distributed to all participants in 85% percent of training sessions. Drugs were distributed in 95% of trainings, while

banners and reporting forms were distributed in 68% and 89% of trainings, respectively. (**Figure 1**). Additionally, stationery was availed to all participants in 48 (77%) training sessions. Distribution of drugs, reporting forms, and training booklets was high, however efforts should be made to increase the distribution of banners.

Figure 1: Materials distributed during teacher training (n=62)



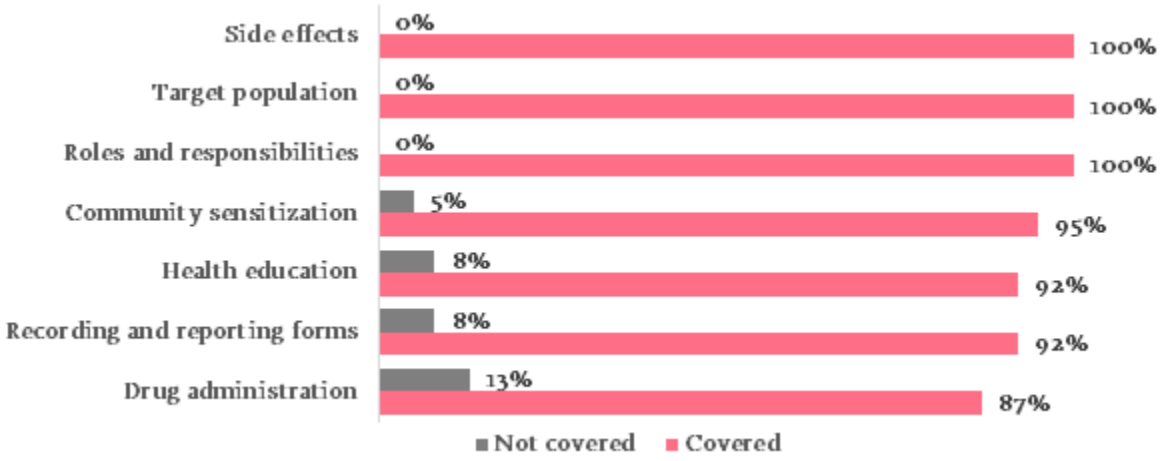
At the training sessions in which drugs were distributed, drugs were provided to teachers in different forms: at least some sealed original containers were distributed in 97% of trainings, and to account for schools with small student populations, some sessions distributed unsealed original containers (3%) and/or bags of tablets (17%).

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 87% of the trainings monitored with topics on side effects, the target population, and roles and responsibilities being covered in all (100%) trainings (**Figure 2**). A key concern is that drug administration was not covered in 8 (13%) of training sessions.

Figure 2: Coverage of topics during trainings (n=62)



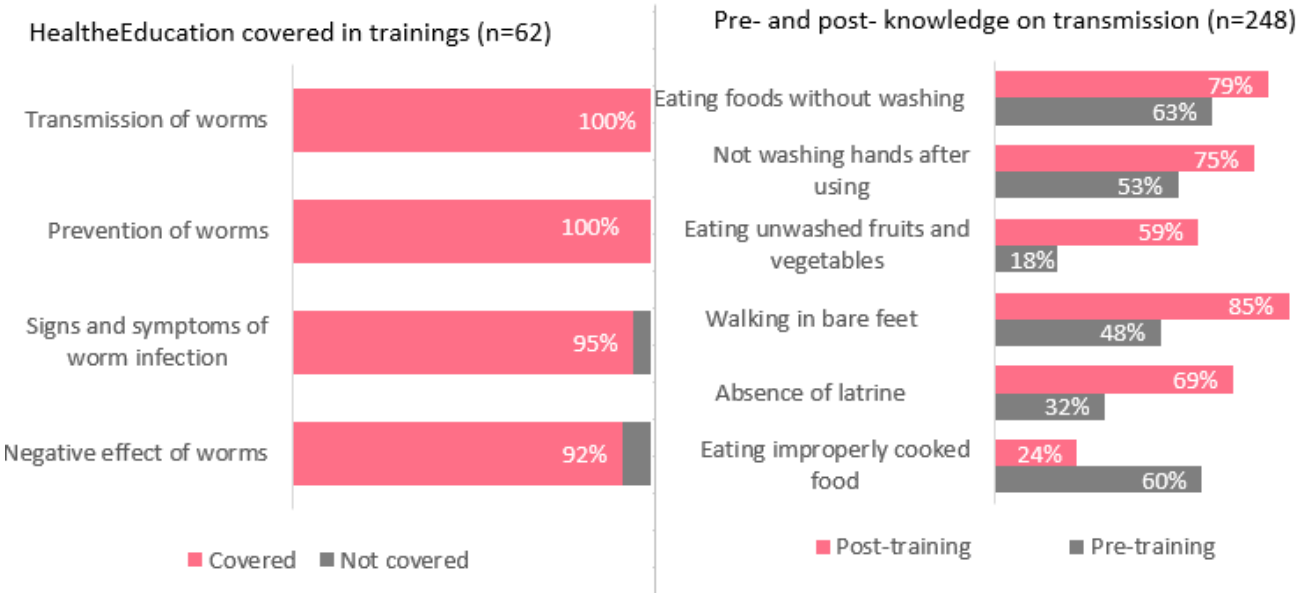
To gauge the effectiveness of the teacher training sessions in terms of knowledge transfer, a sample of 248 participants spread across the training venues was selected for both pre- and post-training interviews. It should be noted that the same set of participants that undertook the pre-interviews also 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 transmission of worms and prevention of worms was covered in all (100%) trainings monitored, while signs and symptoms of worms (95%) and negative effects of worms (92%) were also well covered (**Figure 3**).

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



Post-training interviews with participants revealed that all (100%) those interviewed could cite at least one way a person gets infected with worms. Walking barefoot (85%), eating food with unwashed hands (79%), and not washing hands after using the toilet (75%) were the most cited means of worm infection in the post-interviews conducted.

4.1.3.2 Target Population

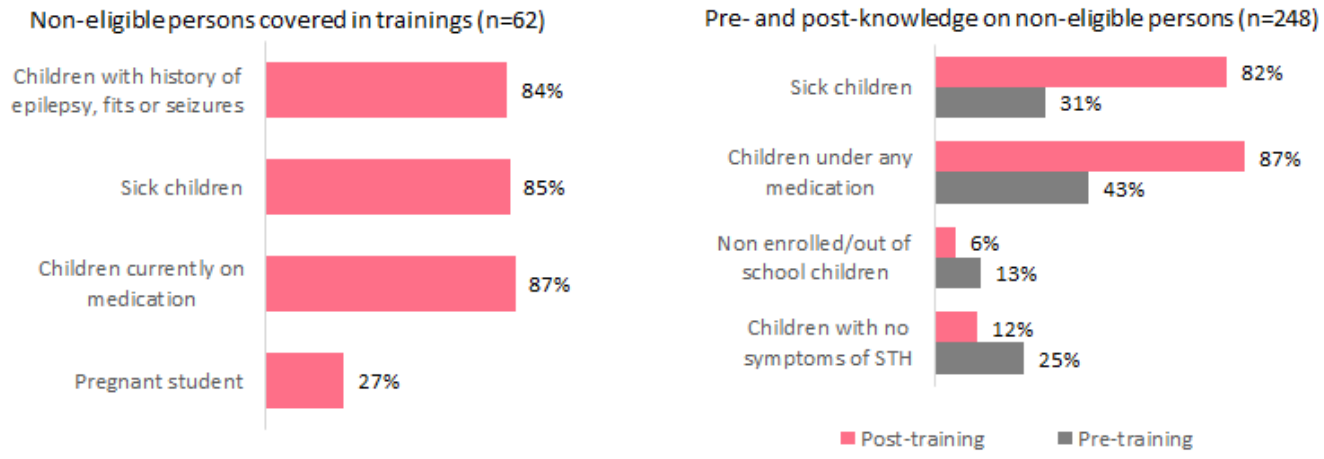
Proper identification of the target group is critical in meeting the program target of treating all eligible at-risk persons. Ninety-eight percent of trainers highlighted that both the enrolled and non-enrolled children; aged 5-14 years formed the target group for this deworming round. The KP deworming date was also echoed in all but 1 (98%) 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 sick children (up 51 percentage points) as well as those under medication as non-eligible for the deworming tablets (up 44 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**).

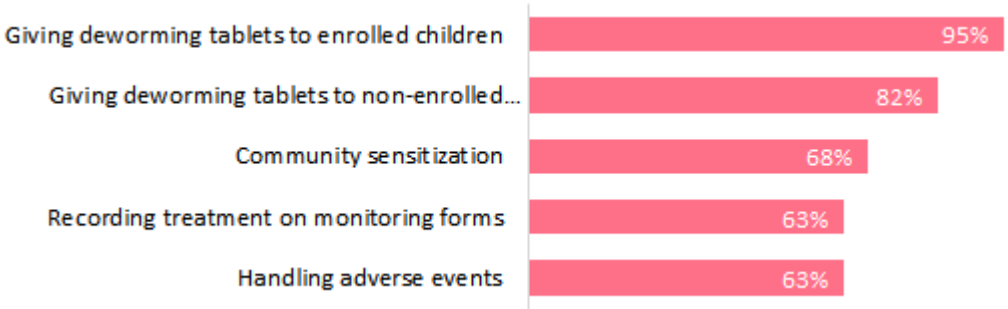
Figure 4: Non-eligible persons covered in trainings and pre- and post-training knowledge



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.

Figure 5: Teacher roles and responsibilities covered by trainers in teacher trainings (n=62)



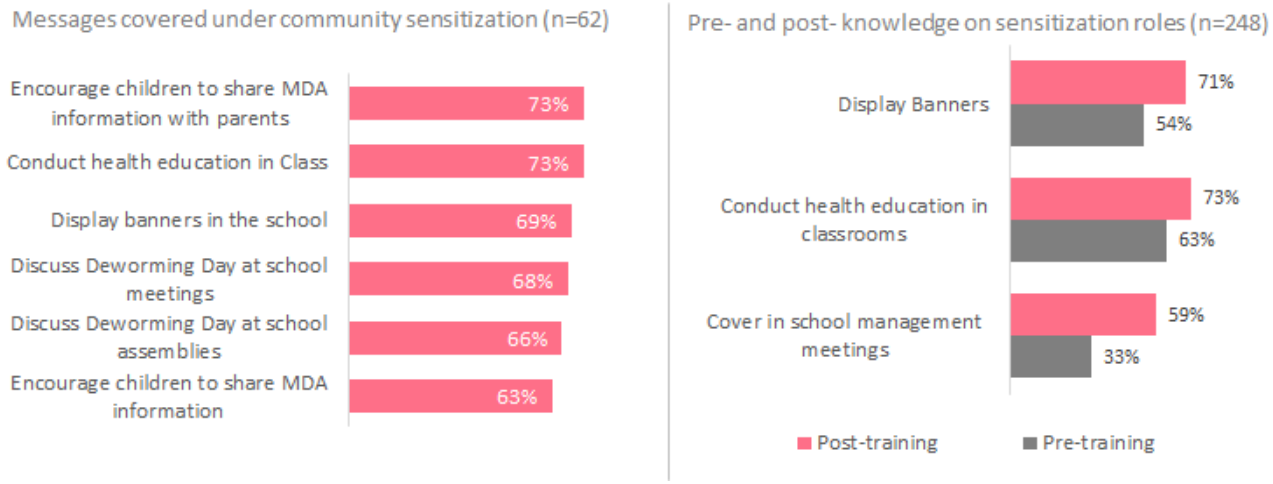
From monitor observations, roles and responsibilities centered on the provision of deworming tablets to enrolled children and non-enrolled children (95% and 82%, respectively) received the most attention (**Figure 5**). However, information on other roles and responsibilities, such as community sensitization,

reporting forms, and handling adverse events were covered in at most 68% of observed training sessions.

4.1.3.4 Community Sensitization

Community awareness of the MDA is pivotal to the achievement of the target therapeutic coverage of at least 75% of the at-risk population. Monitors noted that in 95% of trainings, community sensitization and mobilization activities were covered. In terms of actual roles, encouraging children to share MDA information with parents (73%), displaying banners at schools (69%), and conducting health education in class (73%) were the most mentioned. However, none of the individual topics were mentioned in more than 73% of training sessions. Given that community sensitization is crucial to deworming day success, trainers should be encouraged to make use of these opportunities to convey deworming information (**Figure 6**).

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



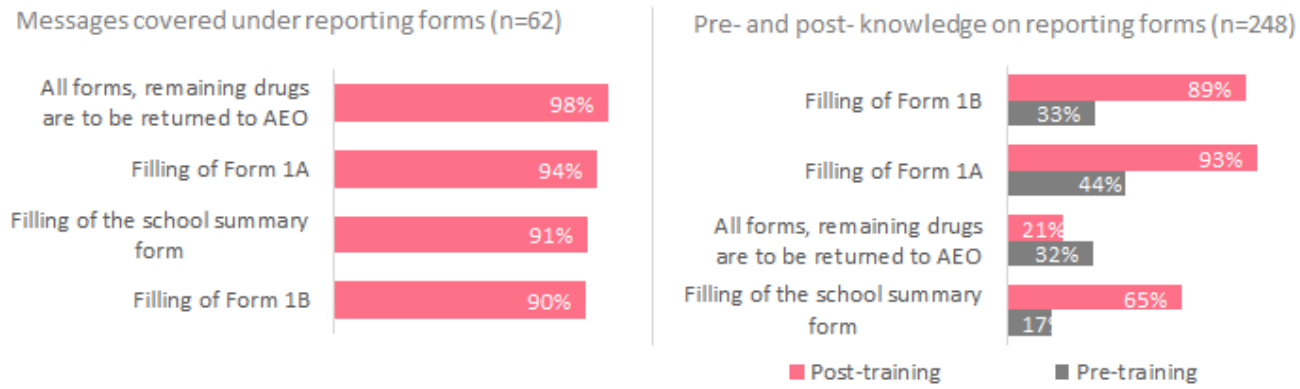
During post-training interviews, monitors noted an increase in the proportion of participants knowledgeable in all messages covered in the community sensitization topic, with a 35 percentage point increase (from 40% to 75%) in teachers identifying the display of banners as one of their roles (**Figure 6**). The most cited key messages that teachers indicated they would share with the community as revealed from post-training interviews were that drugs are free (86%), that the tablets are safe (67%), and that there was one deworming day for the whole of KP (67%).

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 Form 2 (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, at least 90% of all trainings covered all aspects of recording and reporting forms. A high proportion of trainers (98%) highlighted the need to return all forms, remaining drugs to the AEO; however, this knowledge was not properly understood by trainees based on post-training knowledge assessments (**Figure 7**).

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 93% and 89%, increases of 56 and 49 percentage points, respectively, from those noted in the pre-training interviews.

During post-deworming interviews with head teachers, monitors noted that 18% of respondents were not knowledgeable as regards which forms (Form 1A and 1B) would feed into the school summary form (Form 2). Further findings during the Deworming Day indicated that the majority of head teachers (79%) did not know who they would give the summary forms post-deworming (Area Education Officer), which decreased by 11 percentage points from pre-training interviews. This should be an area of focus in

future trainings to ensure that the cascade process is well covered to those actively involved in this activity.

4.1.3.6 Drug Administration

Based on monitors' observations, messages on drug administration generally received excellent coverage (**Table 2**). All topics were covered in at least 94% of trainings monitored, and the correct drug was covered in 100% of trainings.

Table 2: Messages on drug administration covered in teacher trainings (n=62)

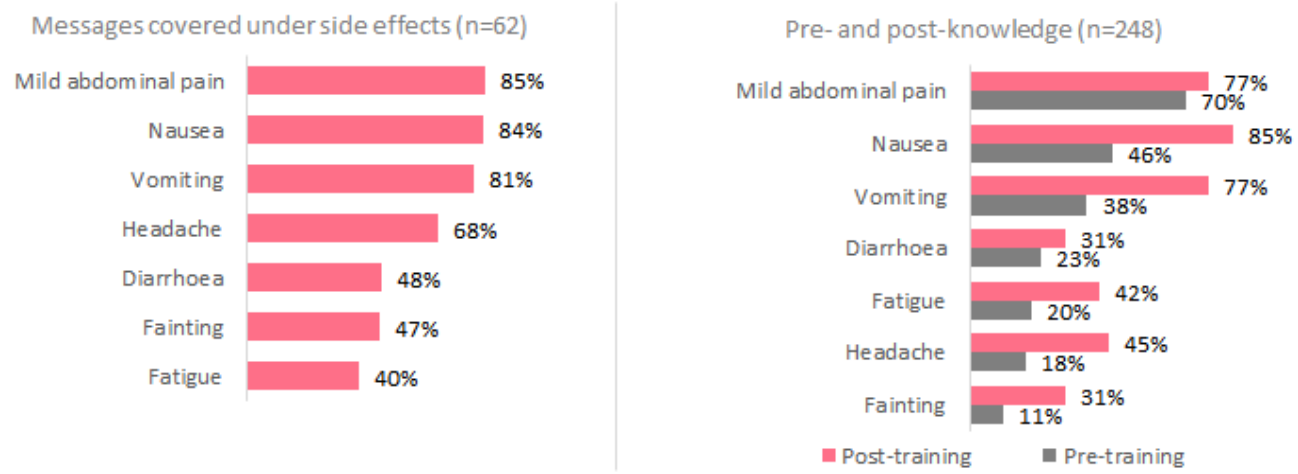
	Percent
STH drug is Mebendazole	100%
One Mebendazole Tablet to be given to each child	94%
Names of all enrolled children need to be copied from the class register on to class level summary.	98%
Complete class level summary form as the child is treated	95%
For non-enrolled children use Form 1B to record treatment	94%
Check child's mouth to make sure that each child chews and swallows the tablet	95%
Under the program, all drugs are free, safe and effective	98%
Drugs must be stored in a clean, safe, dry and cool location	95%

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 94% of training sessions, the trainers provided teachers with the relevant health officer contact information to help with potential side effects. Vomiting, mild abdominal pain and nausea were covered in 81% or more of the trainings, while fainting, fatigue, and diarrhoea 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 (85%) being the most cited side effect in post-training interviews, followed by mild abdominal pain (77%) and vomiting (77%). However, few teachers cited other side effects such as headache (45%), fatigue (42%), and diarrhea (31%) 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 any side effects, the majority of teachers in post-training interviews cited taking the child to an open and shaded area to allow the children lie down (73%) as well as giving reassurance to any affected child that their symptoms will likely pass quickly (68%) as precautions they would take. The proportion of teachers citing the aforementioned precautionary measures increased by 42 and 27 percentage points, respectively, from the proportions noted in pre-training interviews. In the event of any serious or persistent adverse effect lasting more than 2 hours, 71% of participants from the post-training interviews cited that they would take the children to the nearest health facility (a 12 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 4.8 and 4.9 rating, respectively. In addition, the organization of the training session, including invitation, preparation, and distribution had an average rating of 4.7. Conclusively, it can be said that the trainings were very 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 181 parents of enrolled and 23 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 to an even split (51% male and 49% 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 working in agriculture (22%). These proportions (primary occupation) were similar across both sets of enrolled and non-enrolled parents. Both sets of parents also had an average of 3 children in the target group (5-14 years). The average age of children in the households was 9 years.

Forty-four percent of parents reported that they had not achieved any level of schooling, with a higher proportion among the parents of the non-enrolled (61%) as compared to 41% among those for enrolled children. Twenty-six percent of parents indicated that they had completed primary school and 22% indicated that secondary was their highest level of education.

4.2.2 Parents knowledge on deworming

Eighty-eight 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 (90%) as compared to their non-enrolled counterparts (78%).

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.

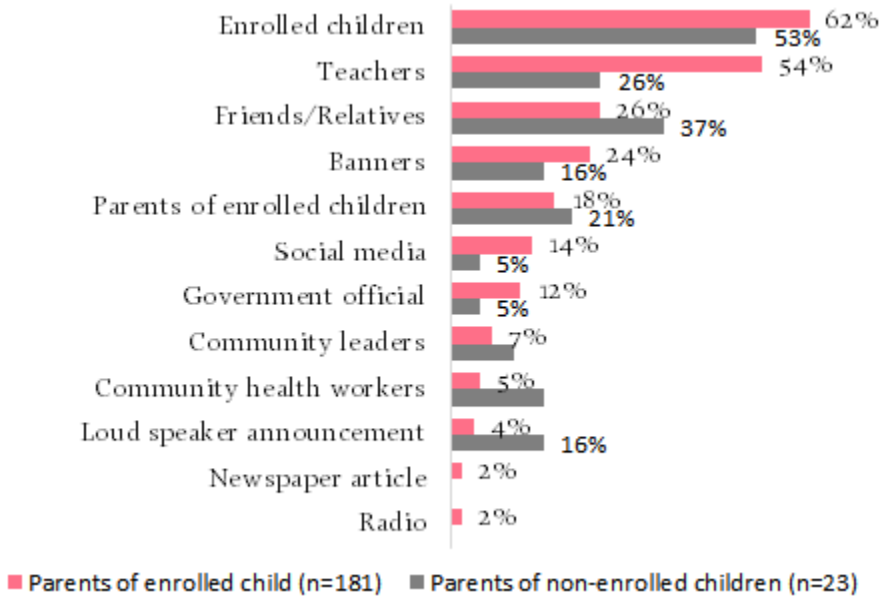
Among parents who were aware of deworming day (88% of parents), 93% knew the correct deworming date, albeit slightly higher among the parents of the enrolled children (94%) compared to only 84% among those for the non-enrolled children. Parental knowledge of the purpose of deworming tablets to treat potential worm infection was very high (overall proportion at 99%; 99% for parents of enrolled children and 100% 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 77%, with 78% of the parents of enrolled children and 68% for the non-enrolled children. Emphasizing the target population age group, benefits and purpose of deworming and date of deworming is critical for program success.

4.2.3 Sources of Deworming Day information

Of the parents that reported hearing about deworming, most cited receiving this information from either an enrolled child (61%) or a teacher (51%). These, together with friends or relatives (27%) and banners hung at school (23%) were the main sources of information, with 21% of parents of non-enrolled children also reporting that parents of enrolled children were a common source (**Figure 9**).

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

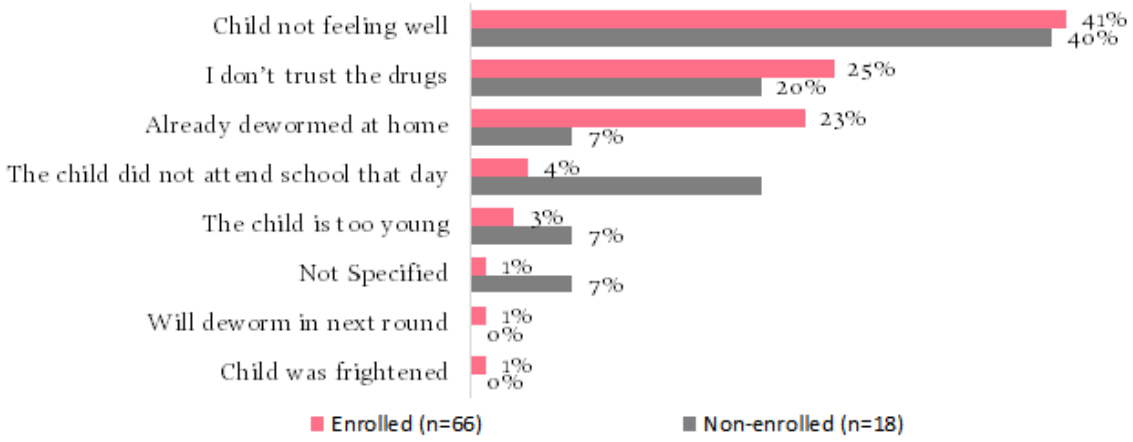


Teachers (51%), enrolled children (42%), and loudspeaker announcements (26%) were the most preferred means of receiving information on future deworming activities by all parents, while parents of non-enrolled children also cited that they'd prefer information through community meetings and government messaging (26% each). Subsequent sensitization plans should leverage these findings, as they are in line with the parents' preferred means of receiving future deworming information.

4.2.4 Parents' reasons for not sending children for deworming

Only 72% of parents interviewed by monitors indicated that they would send at least one of their children for deworming, with this proportion at only 77% for the parents of enrolled children and 29% for the parents of non-enrolled children. The majority of the parents (41% for enrolled and 40% for the non-enrolled) indicated that they would not be sending their children for deworming if the children were feeling unwell (**Figure 10**), with the second major reason being not trusting the drugs used for deworming (25% for enrolled and 20% for non-enrolled).

Figure 10: Reasons cited by parents for not sending children for deworming (n=55)



4.3 Deworming Day

A sample of 68 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 68 randomly selected schools, monitors visits revealed that all 68 (100%) were conducting deworming activities on Deworming Day, and full observation monitoring was completed at all of these 68 schools.

Further findings also indicated that 64% of schools had made plans to deworm non-enrolled children present on Deworming Day, with non-enrolled children noted in 35% of schools monitored.

4.3.1 Knowledge of deworming information

Ninety-seven percent (97%) of head teachers interviewed on Deworming Day indicated that either they (65%) or another teacher (32%) 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 79% of them had either attended the training or been sensitized within the school on how to administer deworming drugs.

Seventy-six percent (76%) of head teachers interviewed knew the correct age group for STH treatment to be between 5-14 years and 74% of teachers were knowledgeable on the same. Knowledge of the correct drug for treatment being mebendazole was high and similar (96%) among teachers and head teachers, while all teachers and head teachers (100%) knew the correct drug dosage of one tablet per child. The relatively low knowledge of the correct age group for teachers and head teachers should be flagged, given their roles in the administration of the drugs.

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 high levels of compliance with the recommended practices as passed on during the trainings (**Table 3**). Over half of the teachers set up central deworming stations (54%), 43% of teachers dewormed children within the classrooms, and 3% dewormed children outside the classroom. In terms of manning the deworming stations, schools adopted various approaches, with one or more teachers manning a centralized area in most schools (69%) and a single teacher conducting the activity from class-to-class (15%) in some others. Each teacher deworming their own class (7%), a few teachers going from class-to-class (6%), and conducting deworming outside each class (3%) made up the remaining observations.

Table 3: MDA procedures observed by monitors during drug administration (n=49)

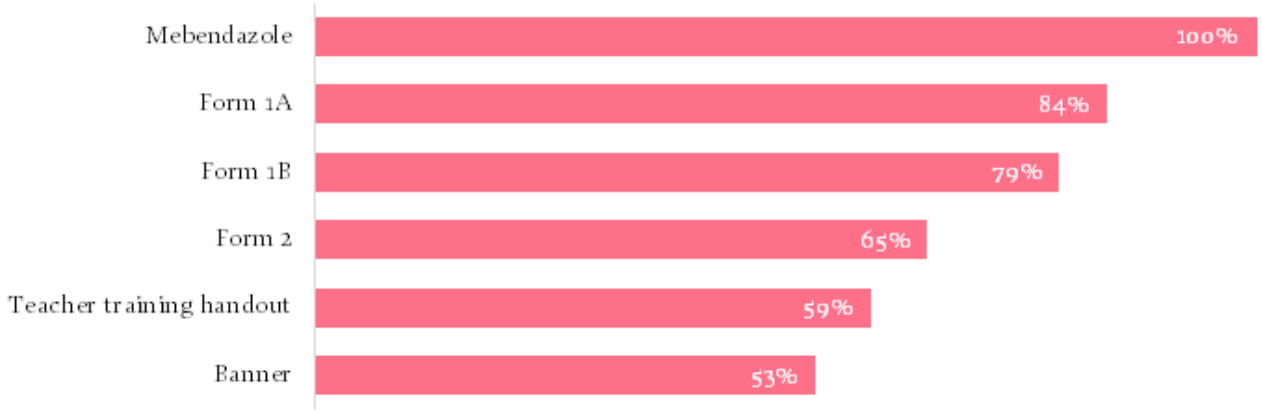
MDA practice	Percent
The child was given one mebendazole tablet	91%
The teacher used Forms 1A and 1B to record treatments	97%
The teacher marked Form 1A and Form 1B as treatment was being administered	88%
Spoilt drugs (those that fell on the floor, were spat out as well as had water spills) were thrown away (n =13)	92%

The teacher had transferred names from the class register to Form 1A	88%
There was a designated teacher to treat the non-enrolled children	56%

In 6 cases, teachers were observed to give more than one mebendazole tablet to a child (9%), while 88% of teachers used the correct forms to record treatments as they occurred. However, 6 of the 8 teachers that did not fill the forms during administration were observed to tick off all children before or after deworming. In 88% of cases, teachers were observed to have transferred the names from the class register to Form 1A before the deworming exercise began. In 56% 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 35% 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=68)



On the other hand, banners were distributed in 68% of the trainings and were observed on display at 53% of schools monitored on Deworming Day. The same findings apply to the teacher training handout, which was distributed in 85% of trainings monitored, but available in only 59% of schools. On the premise of this, the importance of distribution of all materials by Deworming Day needs to be emphasized in training sessions.

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 53 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 (60%) reported that they were contacted by teachers regarding the deworming program, with 62% of those calls regarding side effects management.

No observations of an incidence of severe adverse events were reported for this deworming round. However, head teachers reported observations of 36 (53%) mild adverse events such as nausea, mild abdominal pain, and headache. 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 (81%), which was also the main material used on the school building walls (93%). Most of the school floors were made of concrete (94%), while 5% of floors were observed as earth or earth/dung. Nine schools (13%) lacked any hand washing facilities, while 38% had facilities with only water, and 49% had facilities with soap and water. In addition, all but one school (99%) also had latrines. On average, observed schools had 2 latrines for boys and 3 for girls. Among these, the pit latrine with slab was most common (78%) followed by those without a slab (11%).

5.0 Coverage Validation

Coverage evaluation surveys were administered within six weeks of the MDA in two randomly selected districts of Khyber Pakhtunkhwa. These included one randomly selected urban district, Peshawar, and one randomly selected rural district, Buner, for a total of two districts sampled. Districts were then further subdivided into subunits where coverage validation was administered. Coverage validation intended to achieve the following main objectives:

1. To validate the reported coverage numbers as provided by head teachers
2. To identify reasons for non-compliance

The sample size was determined per WHO guidelines using a probability proportionate to estimated size (PPES) approach. Subunits from the full list of blocks in the district were selected and divided into segments of approximately 50 households. A sample of 30 subunits were selected from each district and in each, one segment was randomly selected.

In the 30 segments, monitors administered a household survey to all at-risk persons within the visited households, with the aim of gathering a representative perspective from the non-enrolled population. At the end of the household survey administration, the field officer with the guidance of a parent of an enrolled child or community elder would request for information of the school that most children in the selected segment attend and then go to that school to administer a school survey. The proportion of household to school surveys was determined using enrollment rates. In each school, the sample was then further distributed equally per class/grade level to select the pupils that would participate in the survey. Please note that when selecting schools only specific types of schools, which had been targeted during implementation, were targeted for interviews during CES. This means that the surveyed coverage obtained especially for the enrolled population will not reflect the entire at-risk population but only the population in the types of school that were targeted during implementation.

In all, 4.6 million school-age children were targeted for deworming (68%), out of the total 6.8 million school age children at-risk for STH in 19 districts of KP. For the two districts in which coverage validation occurred, 702,282 children from 1,702 schools were targeted in Peshawar and 192,602 children from 953 schools were targeted in Buner. As coverage validation was only conducted in two districts of KP,

these rates are not representative of the entire province and should be interpreted with caution. The following are the results of coverage validation in these two districts.

Table 4: Coverage Validation Survey Results

	Program Reach			Surveyed Coverage			Reported Coverage	Denominator[8]
	Mean (%)	% Lower bound CI	% Upper bound CI	Mean (%)	% Lower bound CI	% Upper bound CI		
Survey area								
Peshawar	97%	96%	98%	74%	71%	76%	59%	1,990
Buner	98%	97%	99%	90%	88%	92%	98%	1,428
Disaggregation by enrollment status								
Peshawar								
Non-Enrolled	85%	78%	91%	12%	6%	19%	N/A	121
Enrolled	98%	97%	99%	74%	71%	76%	51%	1,869
Buner								
Non-Enrolled	96%	91%	98%	16%	10%	22%	N/A	148
Enrolled	99%	98%	99%	90%	88%	91%	95%	1,280
Disaggregation by gender								
Male	83%	81%	85%	82%	80%	84%	N/A	2,525
Female	77%	73%	81%	74%	70%	78%	N/A	893

The findings indicate an overall program reach[9] of 97% in Peshawar and 98% in Buner (**Table 4**). The surveyed coverage (the proportion of interviewed individuals who swallowed the drug) was 74% in Peshawar and 90% in Buner. Adjusting for the fact that the program targeted only a 68%[10] of the overall at-risk SAC population in KP, the 74% and 90% surveyed coverage rates of targeted SAC therefore indicate that 43% and 68% of the total at-risk SAC population swallowed the drug in Peshawar and Buner, respectively. While the CES was only conducted in two districts, and therefore not representative of the entire province, we can infer that the overall surveyed coverage was found to be

[8] Number of children interviewed

[9] The "program reach" refers to the proportion of targeted children interviewed who were offered the drug, regardless of whether it was ingested.

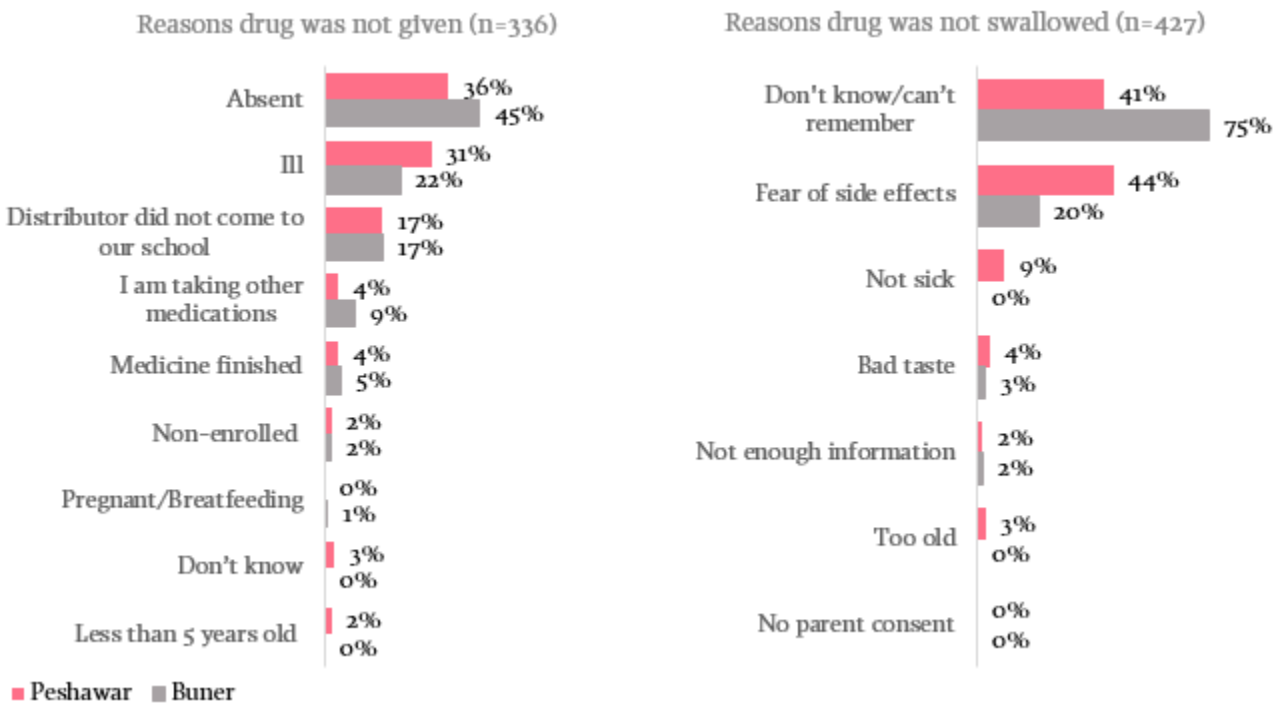
[10] Overall, 68% of SAC in KP were targeted (4.6 out of 6.8 million); in Peshawar 58% of SAC were targeted and in Buner 75% of SAC were targeted for deworming treatment.

below the WHO therapeutic coverage threshold of 75%. However, the overall surveyed coverage was near to or reaching the Y1 program target of 50% therapeutic coverage.

However, when comparing surveyed coverage to the government reported treatment coverage within the same district, Peshawar survey coverage was 74% compared to government reported treatment coverage of 59% which would indicate potential data loss in government reports or significant errors in data aggregation. On the other hand, the survey coverage in Buner was lower (90%) than government reported treatment coverage (98%), which would indicate overreporting within the government reverse cascade.

A disaggregation by gender revealed a program reach and surveyed coverage higher for males than for females; program reach for males was 6 percentage points higher than for females, while surveyed coverage was eight percentage points higher. This rate should be noted and closely tracked to determine if there are any specific reasons for the disparity. However, the disaggregation by enrollment status indicated a much higher program reach and surveyed coverage for the enrolled than for the non-enrolled population.

Figure 12: Reasons drug was not offered and not swallowed



The main reasons provided by those who were not offered the drug were absence (45% in Buner and 36% in Peshawar) and illness (22% in Buner and 31% in Peshawar). For those who did not swallow the offered drug, the main reason was that they do not remember (75% in Buner and 41% in Peshawar) followed by fear of side effects (20% in Buner and 44% in Peshawar) (**Figure 12**).

Aside from the present deworming, monitors also sought to determine if respondents had received any deworming tablets within the last six months of the Deworming Day. The findings indicate that only 1% of respondents had received a tablet prior to Deworming Day in the last six months. Among the 35 children that received deworming tablets within the 6 months of Deworming Day, the majority indicated that the drug was taken from their homes (46%) while the remaining children either took the tablet from a health center (34%) or didn't specify (2%). This low self-reported proportion further underlines the importance of having the MDA.

6.0 Conclusion

What worked well

- The overall execution of the training was commendable. All the trainers were trained within 15 days prior to the teacher training sessions, with 61 out of 62 trainers interviewed communicating that they were sufficiently prepared to conduct the teacher training. In addition, 87% of overall topics were covered in observed training, with sessions regarding target group, side effects, and roles and responsibilities discussed in all observed trainings. Trainees also had very positive overall feedback on training sessions in the areas of preparation, trainers, and the sessions itself.
- The majority of community members (88%) were aware of deworming day activities. Enrolled students and teachers were the most common source of information and were also the most preferred source by parents.
- All the sample schools visited on deworming day were observed to be conducting deworming with more than 88% of the schools following key MDA procedures as taught in the training sessions. In addition, 65% of schools had plans in place to deworm non-enrolled students, and 35% of schools were observed to deworm non-enrolled students. No severe adverse events were observed.

What needs to improve (recommendations)

- Increasing private schools' attendance during teacher training sessions (currently 48%) needs to be prioritized months before the second annual deworming campaign in order to reach the WHO therapeutic coverage of 75%.
- Specific challenges within the KP material and drug distribution cascade need to be identified and mitigated. Hiring of a vendor and outsourcing the distribution of materials and drugs to training venues is essential, particularly for KP and prior to the second round of deworming.
- During the planning phase, the reverse cascade of treatment reports and leftover deworming tablets needs to be detailed, clear, achievable, and aligned with the information presented throughout the training cascade. The teachers trained during the last level of the training

cascade should be the ones responsible for completing Form 1A, Form 1B and Form 2. The results within this report showed confusion directly following the training and on Deworming Day regarding the roles and responsibilities within the reverse cascade and overall steps of the reverse cascade.

- Effective coverage of all key training topics or sessions within the training cascade needs to be emphasized and practiced, specifically target groups for MDA (5-14 yrs. or classes 1-10, enrolled and non-enrolled children), safety of deworming tablets, management of side effects, correct completion of treatment reporting forms and the steps and timeline of the reverse cascade of treatment reports and leftover medicines. Trainers also need to remind teachers that the Teacher Training Handbook needs to be kept at the school as a reference prior to, during and after deworming. The teachers' impact on treatment coverage through messaging and school mobilization (teachers, students, parents) prior to MDA needs to be emphasized during the training sessions. Additionally, increased awareness and attention needs to be placed on treating non-enrolled at every school on Deworming Day.
- School and community sensitization through assemblies, meetings, announcements seem to be the preferred, effective and cost-effective way of increasing awareness and knowledge prior to deworming. Community meetings and government messaging need to be planned, prioritized and conducted weeks before Deworming Day to increase awareness within the non-enrolled target population.
- Coverage validation results suggested potential challenges with data loss, data aggregation and overreporting. The importance of and how to cross-check data and summary forms at each level of aggregation should be part of the training cascade curriculum. Furthermore, the government focal points facilitating every level of the training cascade should be trained and responsible for the reverse cascade of reporting forms and leftover drugs. For example, Master Trainers would then be responsible for the first level of data aggregation of Form 2 (school summary forms) into Form 3.

Recommendations for the next monitoring round

- Coverage validation results suggested that males both received and swallowed the drugs at a higher rate than their female counterparts. There could be many reasons for this rate, however,

it should be tracked and followed up on in future rounds to ensure that there is not a systematic reason behind the difference.

- Recheck survey questions and answers that correspond with Figure 12 to ensure the distinction between not offered deworming tablets and not swallowed is clear.
- Recheck surveys for questions that necessitate prompting, i.e. how community members heard about deworming, and ensure that selected independent monitoring firms are following prompts during interviews.
- There was little mention of social media as one of the ways in which community members learned of deworming activities. During interviews on Deworming Day in KP, only 14% of parents of enrolled children and 5% of parents of non-enrolled children cited that they received their information about deworming through social media. However, supplemental data measuring Facebook advertising showed over 1 million impressions and 970,000 deworming video plays in a week period, which would suggest that the social media strategy employed during the October 2019 MDA was successful in reaching target audiences at scale. In order to have clarity on competing results/data, independent monitoring surveys for the second round of MDA in KP should be further tailored and aligned with the sensitization strategy. Follow up questions to key questions and prompting may be needed to gain more clarity.
- For the next round of independent monitoring, coverage validation survey questions and results should be disaggregated by district and by school type, public and private. In general, all KPI's listed in the table at the end of the Executive Summary will be disaggregated by school type, public and private, in order to further tailor strategies prior to subsequent MDA rounds. Carrying this disaggregation (public and private schools) throughout the entire report would create too many data points, making it difficult to clearly analyze independent monitoring results.