



School Health Programs for the Prevention and Control of Soil-Transmitted Helminthes in Cambodia

It is often overlooked that while malnutrition is caused by a caloric and micronutrient deficiency, it can be exacerbated by parasitic infection. Infection with soil-transmitted helminthes (STHs), commonly known as intestinal worms, is a public health concern in Cambodia with over 70% of Cambodian children infected with STHs¹. Infection with STHs can produce a wide range of symptoms including intestinal manifestations (diarrhea, abdominal pain) and general malaise and weakness, which may affect working and learning capabilities and impair physical growth. Hookworms can also cause chronic intestinal blood loss, resulting in anemia. The causal agents of STHs are *Ascaris lumbricoides*, *Trichuris trichiura* and hookworms. In 2009, Helen Keller International (HKI), in collaboration with the School Health Department (SHD) under the Ministry of Education, Youth and Sports (MOEYS), conducted a situation analysis of institutions and organizations that provided support for STH programs in Cambodia's primary schools. The primary goal of the analysis was to assess the agencies and institutions that are providing STH services, the types of programs offered and the extent of the coverage. Additionally, the existing school health curriculum on STHs was examined in order to identify gaps and develop a plan to improve the curriculum

Background

In July 2004 Cambodia became the first country to provide three out of four school-age children (nearly three million children) with regular treatment against intestinal worms, thus reaching the World Health Organization's (WHO) 2010 target six years ahead of schedule¹. The drugs are distributed across Cambodia's 24 provinces through a school-based de-worming program reliant on the participation of thousands of teachers and support from WHO, UNICEF and other donors. This

extensive drug distribution is complemented by school health programs, which are integral to preventing and controlling STHs.

However, even with these advances in combating STH infection there is still room for improvement. The results of epidemiological surveys show that the prevalence of hookworms in school-age children in Cambodia ranges widely both between and within provinces. For example, 42% to 58% of children in Kratie province, 22% to 82% of children in Stung Treng province and 11% to 32% of children in Kampong Cham province were infected with worms at the time of the surveys². Overall the surveys found that 14.3% of 2,547 children in Cambodia had moderate or severe STHs infections.



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¹ De-worming for Health and Development, WHO, Geneva, 2004

² National policy and guideline for Helminthes control, MoH, 2004

Methodology for Situation Analysis

HKI in partnership with the School Health Department (SHD) conducted a situation analysis between October and November 2009 with a focus on organizations that work with school health programs in relation to the prevention and control of STHs at the primary school level. This situation analysis exercise was conducted to access what is being done, how, where, and by whom as well as to look at how the existing school health curriculum on prevention and control of STHs has been used by school teachers and what additional information should be added. Based on this information, programming gaps, priorities and recommendations are presented.

Selection of participants

The organizations to be examined were selected after reviewing a list that was provided by the SHD of different



Workshop on curriculum development

agencies that were involved with STH school health programs. The SHD was consulted to determine an appropriate number of primary schools, teachers and students to include in the situation analysis and it was decided that six organizations (four governmental institutions and two NGOs), four school directors, 20 teachers and 40 students would participate.

Situation analysis tools

Two questionnaires were developed for the situation analysis. One was administered to government and non-government organizations while the other was used for primary schools. Both questionnaires collected quantitative and qualitative data on school health activities concerned with STHs. Information was collected on matters such as:

GOs/NGOs

- Objectives of the program and nature of activities related to STHs
- Target group, selection process and implementation strategies
- Training activities and technical assistance provided
- Behavior change communication materials

- Funding and sustainability of program/activities
- Challenges related to STH prevention and control

Primary Schools

- Curriculum content
- Teaching methods and materials
- Human resource development
- School facilities for prevention and control of STHs
- Knowledge, attitudes and practices of teachers and students

Conducting interviews and analysis

HKI and SHD provided the overall instruction for the interviews. SHD technical staff interviewed the selected governmental organizations while HKI technical staff interviewed the NGOs. The qualitative and semi-quantitative information was compiled manually. The findings from the questionnaires/interviews were then assembled and tabulations of important components of the STH control program/activities configured.

Results

HKI found that a total of six GOs and NGOs are currently involved directly or indirectly with STH prevention and control activities. These organizations are the School Health Department (SHD), Cooperation for a Sustainable Cambodian Society (CSCS), Sovann Phum (SP), Rural Health Department (RHD), National Malaria Center (CNM) and National Center for Health Promotion (NCHP). Only one (CNM) out of these six institutions/organizations said that they work directly to prevent and control STH infection through a de-worming program for primary schools.

The GOs and NGOs interviewed cover 6,365 primary schools with a total of 2,752,088 students. However, the interviews with school directors, teachers and students found that while high numbers of primary schools have been targeted under the school health programs of these six organizations, many primary schools have only received minimal support due to resource availability and accessibility. Three GOs including RHD, CNM, and NCHP had initiated the development of training manuals, video spots and behavior



Group discussion during workshop

change communication (BCC) materials related to hygiene and sanitation in which STH issues were included. CNM provides training, technical support and other resources such as BCC and training materials related to prevention and control of STHs to relevant stakeholders including primary school directors, teachers and students. CNM works very closely with the Central Medical Store (CMS) to ensure deworming tablets are available at the level of Operational Districts (OD), health centers and schools. SP and CSCS play an important role in coordinating the links between each primary school and health center for deworming tablet distribution to the primary school students.

HKI and SHD found that NGOs played a significant role in supporting the school health programs by empowering and developing the capacity of involved personnel to implement school health activities at all levels. The situation analysis also found that communication and coordination between GOs and NGOs was not consistent.

The current primary school curriculum provides basic information on general health and hygiene and sanitation, but fails to dedicate adequate attention to STHs. Although the current curriculum was developed with key instructions for teachers to follow, this review found some teachers are still confused about content.

Additionally, NGOs already include general hygiene and sanitation components in the existing school health programs. Therefore, introducing specific information about STHs, including hookworms, roundworms and whipworms, will align with existing curriculum and greatly benefit students. Also, it was found that the time allocated for each



Teaching Session on STH at the Primary School

lesson on general hygiene and sanitation, in all grades, was very limited. As a result, teachers have insufficient time to convey important information and engage their students. Nearly all students (n=38; 95%) and school teachers and directors (n=24; 100%) reported that they had heard about STHs. Almost all students had learned about intestinal worms through classroom lessons (n=34; 89.5%), though many students mentioned that they had also learned about STHs through television (n=18; 47%). Television and reading materials, such as books and documents, were cited more frequently by teachers than children as a source for information on STHs (n=16; 66.7% and n=15; 62.5%). Most teachers and students were aware of the STH transmission route. The majority of students interviewed know that intestinal worms are transmitted by dirty hands

(n=34; 89.5%) and walking barefoot (n=23, 61%). Other transmission routes cited were drinking unboiled water, eating raw vegetables or uncooked meat, leaving food uncovered, and playing in dirty areas.

Directors, teachers and students were asked about the symptoms of infection with STHs. The most commonly mentioned symptoms amongst students were diarrhea, nausea and/or vomiting (n=26; 68%), followed by weight loss (n=22; 58%). About half of the students cited abdominal pain (n=21; 55%). The majority of teachers and directors said that "thinness" is a primary symptom of STH infection (n=19; 79%).

The majority of students could name one activity that reduces the chance of infection with STH. Hand washing was the most commonly mentioned behavior, followed by drinking boiled water (n=30; 79% and n=21; 55%). However, only a minority of students knew that de-worming tablets could be taken as a preventative measure (n=7; 18%). Drinking boiled or filtered water was the most common preventative activity mentioned by teachers and directors (n=16; 67%).

In addition, it was found that under the current policy, health centers are charged with distributing de-worming pills to each school in its catchment area, and teachers and administrators then distribute the tablets to students. Although the National Malaria Center (CNM) claims that de-worming tablets are always available at health centers this assessment identified some primary schools that did not have tablets.

Conclusions

The GOs/NGOs that work with school health programs are effective, but limited resources prevent GOs/NGOs from being able to provide full support to all primary schools in Cambodia to address the problem of STHs. Additionally, there is wide variance in implementation strategies between GOs and NGOs that support the school health programs in relation to the prevention and control of STHs.

There is a lack of clarity in terms of goals, objectives, content, teaching methods, teaching materials, time allocation and evaluation in the current teaching curriculum for all grades of primary school in relation to hygiene and sanitation. Teachers are supposed to receive de-worming tablets based on the number of students in their school through coordinated efforts with health centers, but it was found that some schools lacked de-worming pills.

The majority of students interviewed could name one activity that reduces the chance of worm infestation. However, less than one in five children knew that de-worming tablets could be taken to prevent intestinal worms. Additionally, most schools lack appropriate personal hygiene facilities and materials, including latrines, wells, water filters, rubbish bins, soap, towels, nail clippers, tooth brushes and toothpaste. This impedes students' and teachers' ability to apply the lessons learned to control and prevent STHs infection.

Recommendations

1. The curriculum should have clear instructions for teachers that include information about the topic, goals, specific objectives, content, teaching methods, teaching materials, specific time allocation and specific evaluation system of each lesson.
2. NGOs should continue their efforts to empower and develop the capacity of involved personnel to implement school health activities at all levels in order to encourage sustainability and eventually lessen the dependence on NGO support.
3. Communication and coordination among GOs and NGOs that implement school health programs to address the problem of STHs should be improved. Consistent training messages, BCC materials and monitoring systems should be developed to ensure a quality standard package for STH programs.
4. The curriculum should be improved to include more lessons on the direct control of STHs for all grades.
5. The time allotted for lessons on general hygiene and sanitation should be increased to allow for active discussion between students and their teachers.
6. The training of school directors and teachers to address the problem of STHs should be conducted by local health staff with support from NGOs or governmental trainers, so that they have a better link with the local health system.
7. GOs and NGOs should provide support to schools to acquire inputs for health activities such as teaching/BCC materials, latrines, soap, and water filters as they are necessary to help students and teachers prevent and control STHs.
8. Better coordination between health centers and schools is required to ensure that all primary school children have access to de-worming tablets.
9. GOs and NGOs need to develop methods to motivate teachers to perform well without an increase in salary.

Develop an adequate recording and reporting system to ensure that each student is receiving the de-worming pills.

Future Steps

HKI is currently developing a school health curriculum with the SHD that has a stronger and clearer focus on STHs. Once developed, the curriculum will be piloted in Kampong Spue and Takeo provinces. Additionally, a team of key representatives will be formed from the GOs, NGOs, and schools that participated in the initial situation analysis to contribute to curriculum changes. This team will also review and approve the new curriculum before it is tested in primary schools. Throughout the process, effective communication and dissemination strategies will be employed to aid in the further refinement of the curriculum. After piloting the enhanced STH curriculum, students will be assessed to determine the impact that the new lessons have had on students' knowledge.

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