

Provision of school-based health and nutrition services

Successes and lessons learned from Nasirnagar, Bangladesh, March 2009

BACKGROUND

In the developing world, school-age children often face high levels of illness and malnutrition that decrease their ability to attend school regularly and learn to their full potential.¹ Children with infections are twice as likely to be absent from school, and when present, do not perform as well as their peers as recurrent infections adversely affect memory, problem-solving skills, and attention.²

In March 2004, Save the Children conducted a survey in 50 schools in Nasirnagar to assess the health and nutrition status of school children (see table, right) and discovered that nearly all children had intestinal parasites, almost half were anemic, and a quarter were underweight or stunted.³ In 2001, school enrollment in Save the Children's target area was 20 percent lower than the national average and the dropout rate was 64 percent higher.⁴ In interviews, stakeholders highlighted illness as one of the main reasons for poor attendance and subsequent dropout.

As part of its comprehensive School Health and Nutrition (SHN) program initiated in 2004, Save the Children introduced a series of school-based health and nutrition services to address key health and nutrition problems facing primary school-aged children and improve their ability to learn. Funded by Save the Children child sponsors, the program initially covered six of Nasirnagar's 13 unions. In 2006, the program expanded to the remaining unions through PHASE (Personal Hygiene and Sanitation Education), a program initiated and funded by GlaxoSmithKline to reduce schoolchildren's diarrhea-related disease associated with poor hygiene.

APPROACH

Save the Children's package of school-based health services in Nasirnagar included deworming, vitamin A and iron supplementation, first aid kits, and vision screening with referral and treatment. By utilizing existing educational infrastructure to deliver basic health services, the program was able to target and treat children who might not otherwise have had access to preventative and presumptive healthcare, and to do so at a very low cost.

Conditions at baseline

Health indicators (2004)	Portion of children afflicted n=50 schools	
Intestinal parasites	90%	
Anemic	40%	
Underweight <i>low body mass index</i>	25%	
Stunted <i>low height for age</i>	24%	
Education indicators (2001)	Impact area (six unions)	National average
School enrollment	63%	80%
School dropout rate	77%	47%

DEWORMING

More than 150 million school-age children worldwide are severely affected by intestinal parasitic worms. Studies have shown associations between worm infection and under-nutrition, iron deficiency anemia, stunted growth, poor school attendance and poor performance in cognition tests.⁵ In Bangladesh, worm infections are widespread, especially in rural areas, due to poor personal hygiene and unsanitary environmental conditions. As the table above shows, the flood prone sub-district of Nasirnagar is particularly affected, with 90 percent of school-age children suffering from some type of worm infestation. Most children had heavy worm burdens, which increases the risk of morbidity associated with the infections.³ In areas where more than half the children are infected with worms, the World Health Organization recommends treating children twice a year.⁶

In 2004, the government did not provide deworming, so Save the Children introduced twice yearly deworming in Nasirnagar as part of health and hygiene classes, where children also learned about the different types of worms, the mode of transmission, and prevention methods. The



“We wear sandals at school and at home. If we don’t, we may get worms. Worms suck our blood, make us tired and feel sick. We feel better after we receive the [deworming] tablets.”

Fifth grade student, Nasirnagar Government Primary School

program emphasized wearing shoes, especially when using the latrine (to prevent hookworm infections); drinking from a glass at home and school instead of from unclean hands or tube wells; and washing hands with soap after using the latrines and before eating. Since 2004, every six months, almost 99 percent of enrolled primary school students and a large number of non-enrolled children have been dewormed.¹⁵

VITAMIN A AND IRON SUPPLEMENTATION

Vitamin A deficiency is the leading cause of preventable pediatric blindness in developing countries. The provision of adequate amounts of vitamin A reduces child mortality related to vitamin A deficiency and also reduces susceptibility to diarrhea. Although school-age children are not as likely as younger children to die of vitamin A deficiency, around 85 million school-age children are vitamin A deficient, about 7 percent of the school-age population. This deficiency affects children’s immune function and iron metabolism and increases their risk of mortality from infections. Only two doses a year of inexpensive, high-potency vitamin A capsules are needed to prevent vitamin A deficiency and its consequences.⁷

Iron deficiency anemia is the most common nutritional deficiency in the world, and school-age children are among the groups most severely affected. Iron deficiency anemia causes fatigue, low productivity, and a general sense of feeling unwell. Among the possible causes of iron deficiency anemia are parasitic infection and poor diet. It is also associated with other nutritional deficiencies, including vitamin A deficiency. School-aged children with iron deficiency anemia are more likely to have poor physical and cognitive development and poor academic performance. A survey of rural schoolchildren in Africa and Asia found that between 12 and 28 percent of schoolchildren in Asia were anemic.⁵ In Nasirnagar, the 2004 survey found that 40 percent of children were anemic.³

School-based vitamin A and iron supplementation is increasingly seen as an effective way of preventing vitamin A and iron deficiency anemia among school-aged children. Save the Children studies in Mali and the Philippines have shown that weekly iron supplements, combined with deworming and vitamin A supplementation provided by teachers, can effectively prevent and reduce the prevalence of anemia.^{8,9} Other evidence also suggests that iron supplementation improves schoolchildren’s cognitive function and school performance.⁵

For these reasons, Save the Children introduced vitamin A and iron supplementation in schools in 2004. All children received one capsule of vitamin A (200,000 IU) every six months and one iron tablet (65 mg of iron and 0.25 mg of folic acid) once a week for 16 weeks. These were provided at minimal cost by trained teachers, with support from the school management committees and student brigades (see Brief 2: *Changing hygiene behaviors in schools and communities*) during nutrition education sessions. From 2007, vitamin A capsules were generously donated by Sight and Life, a humanitarian initiative of DSM Nutritional Products. In 2008, 96 percent of students received the annual course of iron supplements, while 98 percent of students received two doses of vitamin A.¹⁰

Save the Children trained teachers and school management committees and provided materials to ensure the supplementation followed standard procedures. Children and their families were receptive to the supplementation, understanding that it would improve the children’s overall health.¹¹ The intervention required recordkeeping diligence to ensure students took



Primary school students receive iron tablets in school.

the full course of treatment, as irregular attendance and frequent absenteeism complicated distribution.

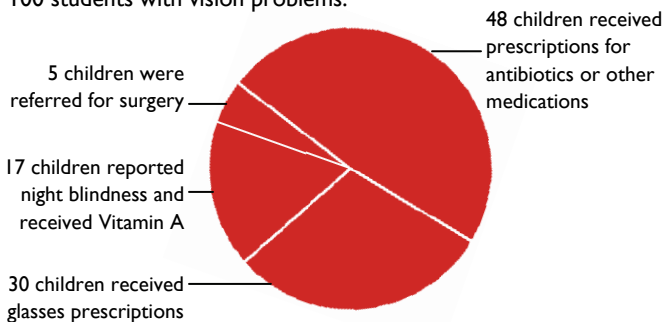
VISION SCREENING

Vision problems can significantly affect a child's ability to participate and learn at school because 75 to 90 percent of classroom learning occurs through the visual system.¹² Information regarding the prevalence of vision problems in Bangladesh is unavailable, partly because many children with vision problems are not in school. Although children with visual impairments may initially enroll in school, they begin their education at a major disadvantage. Basic teacher training does not give teachers skills to address these needs, and in overcrowded classrooms, it is hard for teachers to identify and help children with vision problems. As a result, children with visual impairments are more likely to fall behind in their class work and stop attending school. As one twelve year old girl in grade five noted, "One of my good friends does not come to school anymore since she cannot see properly and cannot follow what teachers say during class lessons."¹³

Identifying children with vision problems is relatively simple and can be done by teachers at the start of the school year. Schools resolve mild vision problems immediately by moving affected children closer to the front of the classroom and refer moderate to severe problems to government health facilities or specialized NGOs for further tests and treatment. Since many children with visual impairments can benefit from low vision devices or optical correction, they can be easily integrated into regular classrooms.¹⁴

Results of vision screening^{11,15}

In 2008, out of 17,594 children screened, teachers identified 100 students with vision problems:



A Child's Story

Mohammad Alauddine is an eight-year-old student in second grade at Bharangar Government Primary school in Nasirnagar. His father is a day laborer and both of his parents are illiterate.



A teacher conducts vision screenings.

A year and half ago, Alauddine began to suffer from serious

vision problems and was almost blind. He was no longer able to read and write in class and his quality of life was deteriorating. His father took him twice to a village doctor, but there was no improvement.

Alauddin then participated in a school vision screening organized by Save the Children. After the screening, his school referred him to a local NGO specializing in vision disabilities for advanced treatment. Alauddine was diagnosed with childhood cataracts and Save the Children provided support for his eye surgery.

Now Alauddine can see well enough to return to school. He is more attentive in class and can play with his peers. His aim when he grows up is to be an eye specialist. "I don't want other children in Bangladesh to go blind in the early stages of childhood," said Alauddine.

FIRST AID KITS

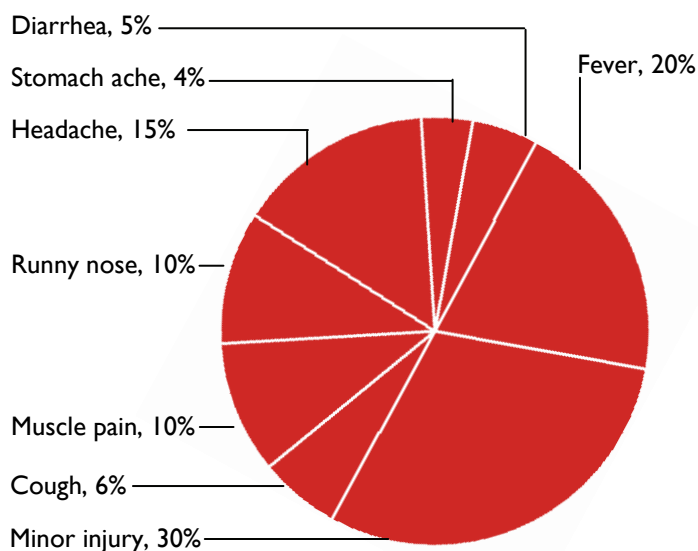
Bangladesh has a critical shortage of trained health professionals and most work in urban areas or close to major cities.¹⁶ This uneven distribution of healthcare providers results in limited access to health services for many school-age children, who must often travel long distances to reach understaffed clinics with few resources. Additionally, many rural families are unable to pay for health services. As a result, most families seek medical care from local healers or children go untreated.

Most schoolchildren's health problems can be treated easily at school by trained teachers. Save the Children distributed first aid kits to all 127 primary schools in Nasirnagar to help children return to class sooner and avoid missing days of school due to relatively minor

illnesses. If a child faces a more serious health problem, a trained teacher can immediately refer that child to the health center and prevent more serious consequences of the disease. Save the Children conducted a one-day training for head teachers on the use and management of the first aid kits. The head teachers then trained and oriented other teachers and school management committees on the use, management and restocking of the kits. Save the Children also included guidance on use of first aid kits in the School Health and Nutrition manual provided to teachers.

Common conditions treated with the first aid kits include minor injury, fever, diarrhea, abdominal pain, headache, cold, and cough. Teachers kept records of all students treated, including a monthly report of health problems and medications dispensed. Save the Children also trained teachers to identify more serious conditions and provide referrals. As the head teacher at Fandauk Primary School explained: “If the children get sick or are injured at school, we use the first aid kits. If the children have persistent fever, they are taken to the hospital four miles away. There is a clinic which is closer but it is not suitable for many conditions.” In 2008, teachers treated 850 students with the first aid kits (out of a student population of around 17,500). Most children received treatment for minor injuries, fever, body aches and cold/cough, as shown in the table, below).

First aid kit cases, Nasirnagar, 2008 (n=850 cases)



A cost recovery system was gradually introduced in all schools, transferring the responsibility of replenishing the kits from Save the Children to the school management committees. The average cost of restocking the kits is less than \$10 per year, which the communities can afford. In a one-year period, the school management committees restocked the first aid kits 175 times across 79 schools, or approximately twice a year in each school.¹¹

SUCCESSSES

An end line survey conducted in 2008, in the same 50 schools as the 2004 baseline survey, using the same methodology, shows that children are generally healthier than they were in 2004 (see graph, next page):

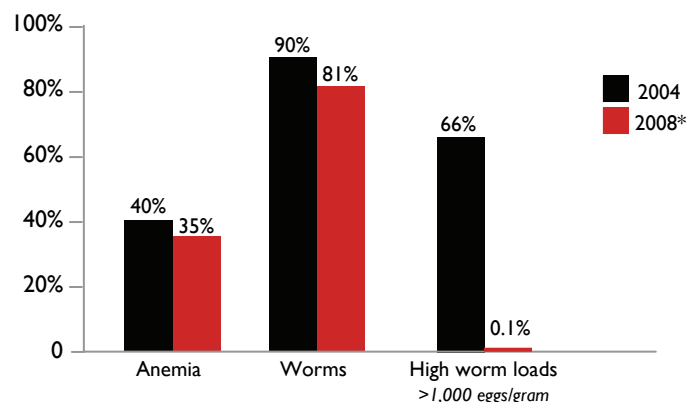
Worm infections. Although children are still becoming infected with worms fairly soon after the deworming, the worm loads are substantially lower and less likely to have negative consequences on children’s health and school performance (see chart, next page).

Iron deficiency anemia. The prevalence of anemia fell to 35 percent from 40 percent, likely a direct result of the deworming and micronutrient supplementation. However, without a comparison group or knowledge of outcomes for children who did not get dewormed or receive micronutrients, the full impact of the interventions cannot be identified. The prevalence of anemia may have increased, with deworming and micronutrient supplementation preventing children from becoming more anemic as found in Save the Children’s Philippines and Mali studies.^{8,9} That said, increasing the frequency of iron supplementation to twice weekly is



First aid kits contain antiseptic cream (for minor injuries), tincture of benzoin (for bandaging wounds), paracetamol (for fever, headache, and muscle pain), an antihistamine (for cough and runny nose), an antacid (stomach pain), and oral rehydration solution (for diarrhea).

Prevalence of health problems among school children in Nasirnagar n=1480



*Represents prevalence of health problems two months after deworming

likely to have a greater impact on children's iron status. However, this potential benefit must be weighed against the extra expense of additional iron tablets and learning costs of teacher and classroom time.

Education outcomes: The Nasirnagar education statistics for the same period show substantial improvements across the board for all education indicators. School attendance rate has increased from 66 to 75 percent, the school pass rate has improved from 82 to 91 percent and the dropout rate has fallen from 20 to 15 percent (see graph in Brief 1: *SHN: An Overview*).¹¹ It is impossible to attribute these improvements to SHN alone without a comparison group. However the interventions likely played a role given the link communities noted between poor health and school attendance/dropout; the high worm loads and anemia identified at baseline; and the growing body of evidence associating regular deworming and micronutrient supplementation with improved educational outcomes.

CHALLENGES AND LESSONS LEARNED

Deworming. Some parents did not understand the long-term harmful effects of recurrent worm infections, expressing misconceptions like, "some worms are good for digestion."¹⁷ Hopefully, the Ministry of Health's National Deworming Campaign, launched in November 2008, will continue to raise awareness on this topic in Nasirnagar and across the country. The campaign has also

begun conducting regular deworming of all school-age children across Bangladesh, which is very encouraging.

Vitamin A and iron supplementation. Although iron supplements are easily administered, the 16-week course of treatment (one tablet per week) requires consistent school attendance by students and significant time and commitment from teachers. To ensure proper treatment, teachers kept records for each student. Information regarding the importance of iron supplements continues to be disseminated in schools through the health education sessions.

In September 2008, Save the Children phased its programming out of Nasirnagar, and it is not yet clear who will assume responsibility for purchasing and delivering the vitamin A and iron supplements to the sub district. Many school management committees have committed to continuing these activities and the Upazilla Education Office has agreed to coordinate the activities at the sub-district level. Without support at national level, these activities will be challenging to continue.

Vision screening. Vision screenings are relatively inexpensive and are expected to continue without support from Save the Children. However, the cost of glasses or corrective surgery are out of reach for most rural families and Save the Children used to cover these costs. Despite the high costs, since October 2008, students referred for vision problems continued to receive low-cost treatment at government health facilities or other NGOS.

First aid kits. Not all schools used and maintained kits consistently. Training enough teachers to manage first aid kits is complicated by a national teacher shortage, which necessitates continuous costly training. The responsibility of replenishing the first aid kits rests with school management committees. Some schools with less active management committees may not have adequate supplies.

NEXT STEPS

School-based health services are an important part of a comprehensive School Health and Nutrition program that aims to address all key health and nutrition problems that prevent children from participating fully in school (see Brief 1: *SHN: An Overview*). In November 2008, Bangladesh's Ministry of Health launched a national

deworming campaign. This is a positive move toward addressing a leading cause of illness among school-aged children in Bangladesh. However at present, the government has no plan to provide vitamin A or iron supplementation to primary school-aged children at the national level. A government program, organized by the Ministry of Health and Family Welfare, currently covers vitamin A supplementation for children one to five years old but there is no support for a similar program targeting children six to twelve years old.

At present, it is also unclear who will assume responsibility for training teachers in vision screening and use of the first aid kits. Unless the government adopts these activities or incorporates them into a national School Health and Nutrition program and national level teacher trainings, they may be discontinued. School Health and Nutrition has been included as a priority in the government's 2005–2010 Health, Nutrition and Population Sector Plan, and Save the Children is hopeful that eventually SHN will be implemented on a national scale.

At district level, Save the Children has succeeded in beginning a dialogue with various government ministries, local administrators, partner NGOs, schools, and communities focusing on the importance and benefits of school-based health services. As Save the Children begins SHN programming in a new target area, we hope that ongoing policy and advocacy efforts will facilitate the incorporation of school-based health services into a national School Health and Nutrition program.

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Photos by Bangladesh Country Office & Natalie Roschnik

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