DIME BRIEF

Kenya: evaluating the impact of malaria on educational achievement

The Development Impact Evaluation Initiative is a broad-based World Bank program to generate knowledge on the effectiveness of government programs. It supports government agencies adopt a culture of real time evidence-based policy-making on the basis of rigorous impact evaluation. By testing *how* to make policies work, it contributes to improving policy performance.

DIME works with 300 agencies in 72 countries across 15 thematic programs to generate knowledge, improve quality of operations and strengthen country capacity for evidence-based policy- making.

This impact evaluation is part of the Malaria Impact Evaluation Program.

Background

As for most of Sub-Saharan Africa, malaria is a serious public health problem in Kenya. Since pregnant women and children under five bear the brunt of mortality and morbidity, the vast majority of malaria interventions focus on these high-risk groups.

Malaria, however, also has a profoundly negative impact on schoolchildren, the full scale of which is yet to be investigated. The disease causes from 4 to 10 million lost school days per year in Africa. Even in its asymptomatic form, the likely consequences of malaria include anemia, neurocognitive impairment, and attention deficits, making it significantly harder for many children to successfully complete primary education.

Because of the growing awareness of linkages between health and educational outcomes, an ongoing study in Kenya evaluates the effectiveness of a malaria control intervention implemented alongside teacher training aimed at enhancing the quality of instruction. This is the first impact evaluation in Africa to measure the combined effects of a disease control and educational intervention on academic achievement.

Impact evaluation

Even though data are still relatively difficult to come by, some studies have investigated the link between malaria and educational achievement. A cluster-randomized trial carried out in 30 schools in western Kenya between May 2005 and January 2006 showed that regular administration of intermittent preventive treatment (IPT) reduced the prevalence of malaria infection by as much as 90%, halving the cases of anemia, and improving children's attention spans. However, these positive effects did not translate into an improvement in educational test scores. This may have been because the 12-month follow-up period was too short to capture the change in academic capabilities, or because of the poor quality of instruction.

A follow-up on the 2006 study is now investigating the impact of regular intermittent screening and treatment (IST) **and** enhanced literacy instruction on the health and educational achievement of schoolchildren in the coastal district of Kwale in Kenya, which consistently records moderate malaria infection rates, as well as lowest mean national examination scores. Alongside the IST intervention, a training scheme for teachers to improve literacy instruction has been introduced. More specifically, the training provides assistance in systematic teaching of key skills for literacy acquisition (e.g. letter names and phonics) and effective teaching strategies such as guided practice and providing feedback.

The evaluation uses a cluster-randomized design, with a total of 101 primary government schools randomly assigned to one of four groups (IST; education intervention; IST + education intervention; neither intervention).

The overarching goals are to quantify the impact of the IST intervention in improving classroom attention, school attendance, and education achievement on the one hand, and the impact of the literacy program on improving early grade reading skills, crucial

to subsequent academic success, on the other. Later the interaction between the two components will be analyzed to establish whether they are working together, so that learning is improved only when teaching is effective **and** children are healthy enough to take advantage of it.

Baseline health and education surveys were conducted between January and March 2010. The first round of follow-up assessments was carried out between January and April 2011. The 24-month education follow-up is scheduled to take place between February and April 2012, and the final results of the intervention are scheduled for dissemination in late 2012.

Potential policy recommendations

Knowledge of the effects of malaria on educational outcomes is far from complete, but the preliminary findings of the present as well as preceding studies provide sufficient evidence that the issue warrants a more in-depth analysis. Should educational achievement be improved as a result of the intervention , this would provide governments and other decision-making bodies with a powerful argument for coordinating healthcare and educational interventions, especially as schools supply the perfect and relatively cost-effective infrastructure for this kind of programs.

Furthermore, some modeling evidence already exists that school-based interventions may have positive spillover effects, such as reduction of malaria parasitaemia in the wider community, especially in low to moderate transmission settings.

Together with the potential of significantly reducing the costs of IST in the future (see Box), these arguments could strengthen the case for combining malaria and educational interventions and provide governments in Africa with clear guidelines on how to improve situations where malaria is common and education quality poor.

Source:

Brooker S et al. 2010. Improving educational achievement and anaemia among school children: design of a cluster randomised trial of school-based malaria prevention and enhanced literacy instruction in Kenya. *Trials* 11, 93.

Brooker S. 2009. *Malaria control in schools: a toolkit on effective education sector responses to malaria in Africa*. World Bank, Washington DC, USA and Partnership for Child Development, London.

Clarke, SE et al. 2008. "Effect of intermittent preventive treatment of malaria on health and education in schoolchildren: a cluster-randomised, double-blind, placebo-controlled trial." Lancet 372: 127-38.

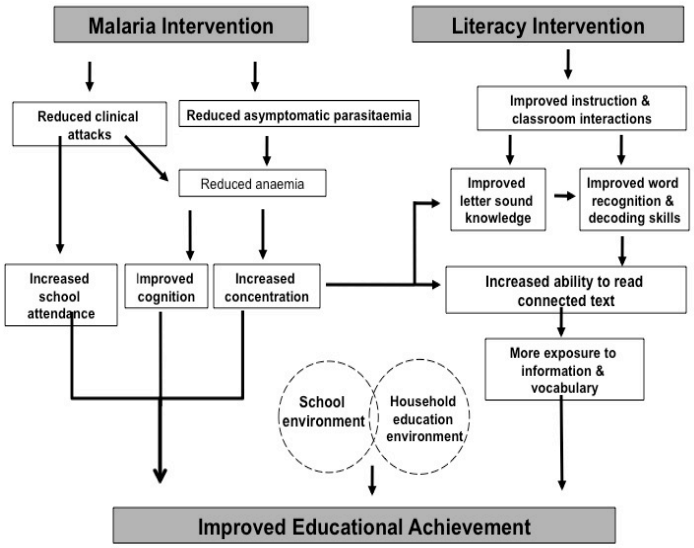
Drake, T. et al. 2011. "Cost analysis of school-based intermittent screening and treatment of malaria in Kenya." Malaria Journal 10:273

Costing in the context of national scale-up

The adverse the effects of malaria on health and school performance of children are being increasingly acknowledged in Kenya and the potential of IST has recently been identified in the Kenya National Malaria Strategy, 2009-2017, under a newly launched *Malaria-free Schools Initiative.* Thus, the study also analyzes the cost-effectiveness of the intervention in the context of rolling out the program nationwide.

Sensitivity analysis has been performed to estimate how sensitive costs are to variation in input parameters, e.g. commodity prices or delivery method. The largest single contributors to costs were found to be salaries (36%) and RDTs (22%). Redeployment of existing resources including health worker time and hospital vehicle use accounted for almost half of the costs (47%). The analysis concluded that the intervention is relatively costly at this point, totaling US$ 365,104 or US$ 6.61 per child screened in financial costs per year for a five-year program.

However, it also points to the potential of reducing these costs by as much 40% without negatively impacting the quality through the following alterations: using a cheaper RDT brand; removing directly observed treatment follow-up; removing technicians from health teams and charging nurses with carrying out RDTs. Additionally, nationwide scale-up may result in a further cost decrease resulting from bulk purchases.



To contact the author email: Simon Brooker, sbrooker@nairobi.kemri-wellcome.org