Kenya: evaluating the impact of malaria on educational achievement

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 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 educational 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 on improving classroom attention, school attendance, and education achievement on the one hand, and the impact of the literacy program on advancing 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 reducing malaria parasitaemia in the wider
community, especially in low to moderate transmission
settings.

Together with the potential of significantly lowering the
cost 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.

Sources:
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school children: design of a cluster randomised trial of school-based malaria
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responses to malaria in Africa. World Bank, Washington DC, USA and Partnership
for Child Development, London.

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Costing in the context of national scale-up
The adverse effects of malaria on health and school
performance 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 from
bulk purchasing.