

Engaging teachers and students to control dengue in Myanmar

Assessing the impact of integrated vector control and community-based participatory interventions

Background

Dengue is the world's most common mosquito-borne disease, with 390 million infections and 20,000 deaths annually.^[1] It is transmitted by *Aedes aegypti* and *A. albopictus*, day-biting mosquitoes that breed in water containers near human habitation.^[2] Today, about 2.5 billion people live in risk areas^[1] — a number that is rapidly increasing due to international tourism and trade, urbanisation, population growth, globalisation and climate change — and most outbreaks occur in Southeast Asia.^[3] Myanmar is classed as a high-burden country and has experienced an average of more than 17,000 dengue cases every year since 2010,^[4] most of which occurred in children 5–9 years.^[5]

Although a dengue vaccine has been developed, it remains mostly unused due to side-effects.^[6] With therapeutic and preventive drugs not yet available,^[7] effective vector control is the best way to fight the disease. This requires community involvement and context-specific interventions. Schools are a cost-effective entry point for such interventions, and engaging students — who are disproportionately exposed to *Aedes* mosquitoes^[8] — in these can lead to a sustainable reduction in transmission.

Country

Myanmar

Donor

Research Council of Norway

Length of project

January 2019 – March 2024

Partners

Global Health Group International

Mahidol Oxford Tropical Medicine Research Unit

Ministry of Health and Sports (MoHS), The Republic of the Union of Myanmar

Norwegian University of Life Sciences

Yangon Regional Health Department

Project outline and objectives

This Norwegian University of Life Sciences and MoHS-led cluster randomised controlled trial in Myanmar — on which Malaria Consortium is a co-investigator — aims to assess the impact of integrated vector control and community-based participatory interventions in schools on dengue incidence and adult dengue mosquito density, as well as on students' and parents' knowledge, attitudes and prevention practices. Aligned with Myanmar's National Strategic Plan for Dengue Prevention and Control, these interventions will include activities designed to improve teaching capabilities and actively involve students in vector control and monitoring.

This study will take place in South Dagon and Shwepyithar: two townships of Yangon with a high incidence of dengue. Twenty-three of the 46 eligible high and middle schools will be included in the intervention arm, and comparison with the control arm will take place after one year.

Via targeted dissemination, the results are expected to inform policy and contribute to reducing dengue transmission and exposure to risk factors in Myanmar and beyond.

Activities

Malaria Consortium and partners will:

- support the training of regional and township health and basic education staff on how to build the capacity of school teachers
- contribute to enhancing the dengue curriculum together with teachers, school directors, the MoHS and the Ministry of Education by co-creating:
 - strengthened manuals and lesson plans covering the theory on dengue, entomology, biology, vector control

and ecology, as well as practical lessons like breeding guppy fish

- extra-curricular activities, including field studies on mosquito ecology, breeding habitats and mapping, mosquito reproductive biology experiments, adult mosquito trap creation, guppy-mosquito predator-prey interaction experiments, and larvae and adult mosquito surveillance
- oversee the quality of the following vector control interventions implemented in schools and households by students and teachers:
 - adult mosquito mass trapping with commercial oviposition traps and locally-produced traps — constructed by students using plastic bottles
 - larval control by placing larvivorous guppy fish (*Poecilia reticulata*) in water storage containers
 - preventing mosquito breeding by covering water storage containers with tightly fitting lids, and through weekly solid waste management and clean-up campaigns
- develop materials promoting behavioural change and knowledge transfer, for teachers and community health workers to implement locally
- organise science fairs where students can share their acquired knowledge with the community
- evaluate the process and impact of the intervention through: disease surveillance; mosquito collection in schools and households; and surveys assessing the knowledge, attitudes and practices of students, teachers and parents
- disseminate the results to local and (inter)national stakeholders via a variety of fora/platforms.

References

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Contact: info@malariaconsortium.org

Cover image: Schoolchildren being shown dengue fish, Cambodia.

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