EFFECTIVENESS OF SCHOOL-BASED DENGUE EDUCATION AND *AEDES* LARVA SURVEILLANCE BY SCHOOL CHILDREN ON DENGUE PREVENTION AND CONTROL IN SCHOOLS OF HLAING THARYAR TOWNSHIP, YANGON REGION

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ABSTRACT

A school-based quasi experimental study by using quantitative and qualitative mixed-methods, aimed to assess the effectiveness of a school-based dengue education and weekly *Aedes* larva surveillance and control among high and middle school children on dengue prevention and control was conducted in Hlaing Tharyar Township, Yangon Region, from June 2019 to December 2020. Sixteen schools were randomly assigned to intervention and control groups by a lottery method and 160 students from grade 7 and 9 (20 students from each eight intervention and control schools assigned by the school principals) were selected in each group. At baseline, all selected students filled in a self-administered structured pretested questionnaire designed to elicit their knowledge and attitude regarding dengue and its vector and prevention, and their practice of prevention and control (KAP). A larva survey was also conducted in each school, and entomological index, container index (CI), were recorded. Students in the intervention group received an interactive dengue education programme with education materials, visual aids, demonstration and microscopy of mosquito life cycle and practical section for searching and elimination of breeding sites, whereas the control students attended regular school lesson. In both groups, the same knowledge, attitude and practice (KAP) questionnaire was re-administered at 2 and 6 months, and larva surveys conducted at 2, 4 and 6 months after dengue training. At 6 months, after school-based dengue education, key informant interviews with teachers and focus group discussion with students from the intervention schools were conducted to obtain information on facilitating factors and perceived barriers to the intervention.

Specific KAP items were compared between groups at each assessment time and between follow-up assessments and baseline within each group. Overall knowledge, attitude and practice scores were calculated as the sum of the responses to items within each domain and compared between groups and over surveys using multilevel mixed-effects random-intercept linear regression models.

Increases in mean scores from baseline to 2 and 6 months in each domain were significantly greater in the intervention group than in the control group ($P<0.001$). Thus, the scores at 2 and 6 months were higher in the intervention group than in the control group in the domains of knowledge ($P<0.001$ at both assessments), attitude ($P=0.052$ and $P=0.001$, respectively) and practice ($P<0.001$ at both assessments).

The container index of the intervention and control schools at baseline (27.8% and 32.5% respectively) decreased markedly in the intervention schools over the 2-, 4- and 6-month assessments to 8.9%, 4.3% and 3.9%, respectively, whereas that in the control schools decreased only to 38.7%, 27.7% and 11.2%.

The qualitative findings revealed six themes of facilitating factors, namely interactive education training with empowerment, full participation of students, mobilization approach of students with formation of larva surveillance teams in school's larva surveillance and control activities, motivation of teachers by photos of control activities on Viber, provision of supporting facilities for weekly dengue control, and monthly supervision by the investigator team. Three perceived barriers were poor interest, perception and cooperation of the principal and class teachers, limitation of regular times for dengue control activities, and poor involvement of staff living in the school compound.

This interactive school-based dengue education intervention with students' participatory *Aedes* larva surveillance and control teams was highly effective not only for increasing KAP of the students but also in reduction of container index for dengue prevention and control. The findings also showed that relying on students' participation was highly effective and successful rather than absolutely relying on school teachers and the health department to achieve an "*Aedes* Free School Programme". It is recommended to organize the intervention of school-based dengue education with weekly students' *Aedes* larva surveillance and control activities for the middle school students in other schools locating in areas where dengue infection is endemic.