Dengue surveillance using gravid oviposition sticky (GOS) trap and dengue non-structural 1 (NS1) antigen test in Malaysia: Randomized controlled trial

ABSTRACT

Dengue remains a major public threat and existing dengue control/surveillance programs lack sensitivity and proactivity. More efficient methods are needed. A cluster randomized controlled trial was conducted for 18 months to determine the efficacy of using a combination of gravid oviposition sticky (GOS) traps and dengue non-structural 1 (NS1) antigen for early surveillance of dengue among Aedes mosquito. Eight residential apartments were randomly assigned into intervention and control groups. GOS traps were placed at the intervention apartments weekly to trap Aedes mosquitoes and these tested for dengue NS1 antigen. When dengue-positive pool was detected, the community were notified and advised to execute protective measures. Fewer dengue cases were recorded in the intervention group than the control. Detection of NS1-positive mosquitoes was significantly associated with GOS Aedes index (rs = 0.68, $P < 0.01$) and occurrence of dengue cases (rs = 0.31, $P < 0.01$). Participants' knowledge, attitude, and practice (KAP) toward dengue control indicated significant improvement for knowledge ($P < 0.01$), practice ($P < 0.01$) and total scores ($P < 0.01$). Most respondents thought this surveillance method is good (81.2%) and supported its use nationwide. Thus, GOS trap and dengue NS1 antigen test can supplement the current dengue surveillance/control, in alignment with the advocated integrated vector management for reducing Aedes-borne diseases.