

Aedes aegypti Breeding Pattern in Dengue Hotspot Localities in the District of Klang, Selangor

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ABSTRACT:

INTRODUCTION: After the 2-year hiatus during the COVID-19 pandemic, dengue is again showing an increasing trend in Malaysia since early 2022. The same trend is seen in the Klang Valley and district of Klang specifically. Dengue control and prevention activities in any locality require community and multi-agency efforts. In order to evaluate the effectiveness of these interventions, entomological surveillance is central.

METHODOLOGY: We analysed data from entomological surveillance conducted in 11 dengue hotspot localities in Klang from January to June 2022. Surveillance was done within a radius of 100m from reported dengue cases premises, by collecting immature stages of mosquitoes found in any container or receptacle. Containers or receptacles found with immature stages were counted and categorised according to the type of container and location found: indoors, semi-outdoors, or outdoors. Collected immature stages were then identified for species and counted.

RESULTS: A total of 216 premises were inspected, the majority of which comprised of residential dwellings. Of the 1756 containers examined, 68% contained water, and 64 were positive for immature stage of mosquitoes. The average Aedes Index (AI) is 21.0%, while Breteau Index (BI) was 26, both exceeding the recommended threshold. Top key breeding containers were pails (10.9%), water drums/containers (10.9%) and vases (9.4%). The dominant mosquito species found in containers was *Aedes aegypti* (81.3%). Indoor breeding containers was found to be significantly higher than outdoor breeding containers ($p < 0.05$).

DISCUSSION & CONCLUSIONS: Despite continuous efforts by the health authorities and other agencies, dengue continues to be an endemic problem with high burden of morbidity and mortality in the country. The general assumption is that dengue is caused by mosquitoes breeding in outdoor containers. Although our findings found both outdoor and indoor breeding containers, of interest is the high level of indoor breeding containers noted despite dengue control activities being carried out in these localities in the weeks preceding. A major possible reason could be that the recent opening up of the economy and lifting of travel restrictions have left people busy and with little time spent at home, thus overlooking conducting regular cleaning or self-search and destroy activities. The frequent water cuts in the Klang Valley aggravate the situation as people are forced to store water in various types of containers. This corroborates with our finding of top key breeding containers in pails and water drums or containers. Thus, awareness should be raised on the use of larvicide in all kinds of water storage containers. Our findings underscore the urgent need for raising awareness and educating the local community on the types of containers that can breed *Aedes aegypti* and the need for conducting regular and consistent search and destroy activities within the premises. Further studies are needed to assess the effectiveness of our current health education activities and barriers to translation into action of *Aedes aegypti* breeding prevention measures in general and indoor breeding specifically.

KEYWORDS: Dengue, Dengue Outbreak, Entomological Surveillance, *Aedes aegypti*