J Vector Borne Dis 52, September 2015, pp. 245–251

Oviposition and vertical dispersal of *Aedes* mosquitoes in multiple storey buildings in Colombo district, Sri Lanka

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ABSTRACT

Background & objectives: The Colombo City in Sri Lanka is experiencing tremendous development and construction of multiple storey buildings and high rise apartments. The change in housing types and microhabitats might have altered the flight and breeding behaviour of *Aedes* mosquito population. This study was carried out to determine the vertical dispersal and abundance of *Aedes* mosquitoes in multiple storey buildings in the Colombo district, with respect to abiotic factors such as rainfall, humidity and wind speed. Hence, this study is of paramount importance, particularly for planning and implementation of control measures against *Aedes* mosquitoes.

Methods: An ovitrap based study was carried out at four selected multiple storey buildings in four residential areas located in Colombo, Sri Lanka, from August to December 2013. Results were analyzed using four indices; ovitrap index, mean number of larvae, mean number of eggs and mean number of larvae per ovipaddle.

Results: The results implied that *Aedes* mosquitoes could be found in different elevations from ground floor to the highest floor (130 ft). There was a significant difference between height and ovitrap index ($p<0.05$), and height and mean number of larvae per recovered ovipaddle ($p<0.05$). The highest index value for mean number of eggs was observed as 3.492 ± 0.655 at the 6th floor (60 ft high from ground level). At the same height (60 ft height) other indices (ovitrap index, mean number of larvae and mean number of larvae per ovipaddle) also displayed higher values, *i.e.* $13.19 \pm 2.98\%$, 1.366 ± 0.527, and $2.070 \pm 0.421\%$, respectively. Abiotic factors such as wind speed, coastal nature, *etc.* displayed a significant effect to the vertical dispersal of *Aedes* mosquitoes ($p<0.05$).

Interpretation & conclusion: The study suggested that *Aedes* mosquitoes are able to breed at any level of the buildings and not restricted by their height. The indices (mean number of larvae, mean number of eggs) representing the vertical dispersal with respect to abundance seemed to be statistically non-significant ($p>0.05$) with height which indicates high abundance of *Aedes* mosquitoes at higher floors. Abiotic factors also seemed to cause significant effect to the vertical dispersal of *Aedes* mosquitoes in high rise buildings.

Key words *Aedes* mosquitoes; Colombo district; dengue; multiple storey buildings; oviposition; Sri Lanka; vertical dispersal