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Abundance and distribution pattern of *Aedes aegypti* and *Aedes albopictus* in selected urban, sub-urban and rural areas of Gampaha District, Sri Lanka

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The abundance and distribution of *Aedes aegypti* and *Aedes albopictus*, vectors of dengue fever, were determined at six localities in Gampaha District, which is the district with the occurrence of second highest number of dengue cases during last five years. Negombo and Wattala areas were selected to represent urbanized communities, Gampaha and Attanagalla to represent sub-urban communities and Dompe and Divulapitiya were selected for the rural communities based on population density. Percentage of premises infected with *Aedes* larvae (Premise Index) and the number of positive containers for 100 premises inspected (Breteau Index) were used as a proxy to determine the abundance of vectors. Larval collections were done monthly during April 2016 to June 2018 using random sampling technique for minimum 100 houses within a radius of 300 m. Potential breeding places in each site were identified and categorized accordingly. Out of 7916 premises examined, 1011 (12.8%) premises were found to be positive for *Aedes* mosquitoes. Among them 10.1% and 89.9% were found to be positive for *Ae. aegypti* and *Ae. albopictus*, respectively. *Ae. aegypti* was mostly prevalent in highly urbanized MOH areas (73%) while it showed low abundance in sub urban (21%) and rural (6%) areas. On contrary, abundance of *Ae. albopictus* was highest in sub-urban areas (47%) and lowest in urban areas (18%). Premise index (PI) for *Ae. aegypti* in urbanized areas were significantly higher than that of sub-urban ($F=9.13$, $p<0.05$) and rural areas ($F=15.49$, $p<0.05$) in Gampaha District and there was no significant difference ($F=4.04$, $p>0.05$) between PI of *Ae. aegypti* in sub urban and rural areas. The PI of *Ae. albopictus* in sub-urban areas was significantly higher than that of urban areas ($F=15.43$, $p<0.05$). There was no significant difference ($F=1.44$, $p>0.05$) between PI of *Ae. albopictus* in sub-urban and rural areas. Similarly, there was no significant difference between mix indices for *Ae. aegypti* and *Ae. albopictus* in Gampaha district ($p>0.05$). There was a strong correlation between the Breteau Index and the number of dengue patients reported in urbanized areas ($r<0.5$). Higher correlation was recorded with *Ae. aegypti* than *Ae. albopictus*. Therefore, occurrence of dengue epidemics are strongly correlated with *Ae. aegypti* indices in city areas of Gampaha District and present study suggests that Stegomyia indices can be used as a proxy to determine dengue transmission risk.

Keywords: *Aedes aegypti*, *Aedes albopictus*, dengue, Gampaha, larval indices