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ENTOMOLOGICAL SURVEILLANCE FOR EFFECTIVE DENGUE CONTROL IN URBAN SETTING: A CASE STUDY FROM COLOMBO MUNICIPAL COUNCIL, SRI LANKA

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Dengue is a major public health issue in Sri Lanka, particularly in the densely populated Colombo Municipal Council (CMC) area. This study aimed to assess entomological indices, identify critical breeding sites and to conduct risk assessments for each premise selected from Medical Officers of Health (MOH) areas. Entomological surveys were conducted from January to June 2024 following sentinel sites, routine and spot survey protocols. Maligawaththa ward from MOH D2B, Wanathamulla ward from MOH D3 and Narahenpita ward from MOH D4 were selected as sentinel sites. Areas that recorded high number of dengue patients for the last five years were selected as routine sites. Spot surveys were conducted upon reporting of dengue patients. Premise Index (PI) and Container Index (CI) were calculated for all MOH areas, while the Breteau Index (BI) was calculated for three sentinel sites. The survey covered 5,439 premises and examined 48,856 containers, of which 323 (5.9%) premises were positive for *Aedes* larvae (*Ae. aegypti*: 82.3%, *Ae. albopictus*: 17.7%). High positivity rates were observed in non-residential premises (62.7%), including government institutions (84.2%), construction sites (80.0%), schools (71.1%), and religious places (63.3%). Among the container types, construction materials had the highest proportion of wet containers (20.4%), while discarded items had the highest proportion of dry containers (27.6%). *Aedes* larval-positive containers followed the order of water-storing items (19.5%), wet floors (16.8%), and kitchen-associated containers. An increase in outdoor and discarded containers (62.9%) was observed during the latter part of sampling compared to the first quarter (37.1%). A gradual increase in entomological indices was observed from May, with the PI approaching 10 and the BI surpassing 5, coinciding with the initial dengue peak in the CMC. A higher *Ae. aegypti*, larval-positive containers were observed compared to *Ae. albopictus* ($t = 4.27$, $p = 0.0006$). The high-risk premises and specific container types identified by this study have laid a strong foundation for targeted dengue control interventions.

Keywords: Bretau Index, Container Index, Dengue, Entomological survey, Premise Index