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ASSOCIATION OF ENTOMOLOGICAL INDICES OF DENGUE VECTORS WITH WEATHER VARIABLES IN KURUNEGALA DISTRICT

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Dengue has been identified as one of the major public health problems in Sri Lanka. This study aimed to determine the association between weather variables and the entomological indices of *Ae. aegypti* and *Ae. albopictus* in selected localities in Kurunegala District. Larval surveillances were carried out in 4,833 houses in two urban areas (Bandarnayakapura, Galgamuwa), a semi-urban area (Meegahakotuwa) and a rural area (Buluwala) from January, 2019 to December, 2019. A total of 2,935 larvae (*Ae. albopictus* = 2702; *Ae. aegypti* = 235) was collected and monthly larval indices, *viz.* Premise Index (PI), Container Index (CI) and Breatue Index (BI) were calculated according to WHO guidelines. *Aedes aegypti* was collected only from urban sites showing a preference of this species to urban areas. *Aedes albopictus* was the dominant species in the area spreading from urban to rural communities. For *Ae. aegypti*, PI (r = 0.785) and BI (r = 0.745) had positive significant correlations ($p < 0.05$) with RH in Meegahakotuwa site. For *Ae. albopictus* also these two indices, PI (r = 0.644) and BI (r = 0.666), had significant correlations with RH for the same site. In addition, both these indices of *Ae. albopictus* showed positive significant correlations with rainfall (PI: r = 0.981, BI: r = 0.970) and RH (PI: r = 0.893, BI r = 0.892) for Bandaranayakapura study site. No other significant correlations were observed between weather parameters and the entomological indices. The change in BI with rainfall data for one-five-week lag periods was analyzed. Observations revealed a significant positive correlation for *Ae. aegypti,* between rainfall and BI after one-week and two-week lag period. For *Ae. albopictus*, the rainfall data significantly correlated with BI at the time of rain, BI after one-week, two-week range and three-week lag periods. These data indicate that *Ae. albopictus* is capable of surviving in a wide range of water availability. Since there was a significant correlation between rainfall and BI at Bandaranayakapura, the data were used to develop a prediction model. Model is supported with Rsq with 89%. This study provides baseline information on the association between meteorological factors and the larval indices.

Keywords: Dengue, Indices, Kurunegala District, Prediction model