PREDICTION OF DENGUE TRANSMISSION AND IDENTIFICATION OF FACTORS RESPONSIBLE FOR BREEDING OF VECTORS IN DENGUE RISK AREAS OF MATALE DISTRICT

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PREDICTION OF DENGUE TRANSMISSION AND IDENTIFICATION OF FACTORS RESPONSIBLE FOR BREEDING OF VECTORS IN DENGUE RISK AREAS OF MATALE DISTRICT

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Dengue/dengue haemorrhagic fever is one of the major public health problems in Sri Lanka. *Aedes aegypti* and *Ae. albopictus* are regarded as the principal and secondary vectors in Sri Lanka. In 2004, 352 dengue cases were reported in the Matale district. Therefore a field study was carried out to determine the key premises and containers suitable for *Ae. aegypti* and Ae. *albopictus* breeding in the dengue risk areas of Matale District. Six dengue high-risk areas of Ukuwela, Rattota Secretariat division and Matale Municipal area in the Matale District were randomly selected for this study. Three year entomological surveys were carried out in these selected areas during 2004-2006 by entomology teams attached to Anti Malaria Campaign, Matale. All water filled containers in 6 study localities covering 100 houses per locality were examined and larvae were collected using dipping and siphoning techniques. Larvae were identified into species.

The data collected by the Anti Malaria Campaign, Matale were statistically analyzed. There were two species of dengue vectors, *Ae. aegypti* and *Ae. albopictus* prevailing in Matale district. Six types of artificial and natural containers namely, indoor and out door ground level water storage tanks and barrels, discarded receptacles and tyres, leaf axils of some plants and ornamental containers served as breeding places of vectors.

The normality of the population has been checked using Anderson- Darling test (P=0.005) and the hypothesis that the population is normal is rejected. Therefore we use the Non parametric method. Of all the type of water filled containers, a high proportion of out door ground level water storage cement tanks were infested by *Ae.aegypti* and *Ae.albopictus* larve. The containers left out doors showed a higher frequency of breeding vectors than those kept indoors. Middle income houses were significantly more likely to have Aedes larvae- infested containers than high and Low income premises and Houses were significantly more likely to have breeding vectors than those kept Government Institution, Building sites, Dumping wards, and commercial sites.

Multiple regression analysis was used to explore the relationship between the monthly climatic parameters Rainfall, Temperature Minimum and Breteau Index (BI), Container Index (CI), House Index (HI) as independent variables and the number of incidences of Dengue/dengue haemorrhagic fever (DF/DHF) incidences as dependent Variable. In present statistical modeling approach three multiple linear regression (MLR) models are developed for the response variable. Three models are the DF/DHF cases with the Rainfall, Temperature minimum, BI and DF/DHF cases with the Rainfall, temperature minimum, CI and DF/DHF cases with the Rainfall, temperature minimum, HI. The resulting models were developed with one-month lag of DF/DHF cases. After that taken the transformation on response variable, and by introducing dummy variable to represent seasonality of Rainfall. R-square values for the three models are 0.74, 0.71, and 0.71 respectively. Model validation has been carried out using the available data.