

EVALUATION OF THE SPATIAL AND TEMPORAL TRENDS OF DENGUE OUTBREAKS IN GAMPOLA, CENTRAL PROVINCE, SRI LANKA

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Dengue is the world's fastest growing vector borne disease, and it has become one of the major health concerns in many countries including Sri Lanka. Despite immense efforts and control strategies it claims 30,000 - 35,000 deaths per year, making dengue a priority health issue in Sri Lanka. Investigation of the recent trends of dengue outbreaks on both a spatial and temporal scale is of high importance in drafting and implementing effective management/action plans to ensure successful management and control of dengue epidemics on a regional scale. Hence, a statistic and geo informatics based analysis of the recent trends in dengue distribution was carried out to identify spatial and temporal trends in distribution patterns of dengue in the Gampola Medical Officer of Health (MOH) division.

Monthly records of reported dengue cases from 2009 to 2013 of the Gampola MOH division were collected. A scatter plot analysis in MINITAB (version 14.12.0) was devised to identify the temporal patterns in the reported dengue cases. Arc GIS (version 10.1) was devised to develop spatial maps (at the GND level) of the recorded dengue case distribution for each month and for the whole study period, for Gampola. Furthermore, spatial (at GND level) and temporal (annual) variations in dengue outbreak distribution within the Gampola MOH were analyzed to recognize the recent trends in dengue distribution. Gampola East, Gampola West, Illawathura, Keerapane, Kahatapitiya, Egodakalugamuwa and Pussellawa localities emerged as high-risk areas, while Polkumbura, Kurukude, Galgediyawa, Amuhena and Hunukotugama emerged as low risk areas for dengue outbreaks. Further localities, namely Godagama, Kalugalhinna, Kekulanda, Millagaspitiya, Sinhapitiya North, Sinhapitiya South, Pussellawagama, Ranawala and Wanahapuwa remained unchallenged by dengue throughout 2009 - 2013. The paired-Chi square test revealed significant spatial and temporal variations in the emergence of dengue outbreaks within the Gampola MOH throughout the study period [$>x_2(48, 0.95) = 65.156$]. Regionalized evaluation of recent trends in temporal and spatial distribution of dengue outbreaks are recommended in the design and implementation of management plans to control the rise of dengue, and also in the evaluation of the effectiveness of already implemented practices taken to reduce and control dengue outbreaks, by the government sector and other relevant entities.

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