SPATIAL DIMENSION OF THE DENGUE EPIDEMIC IN RELATION TO AGE AND GENDER IN KOLONNAWA AREA, SRI LANKA

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Abstract: *Dengue fever is an acute mosquito born viral disease which is spread widely in Sri Lanka at present. Colombo district claimed for the highest number of recorded dengue cases in 2016. Kolonnawa Medical Officer of Health (MOH) area, situated in the outer skirts of Colombo metropolitan region has been identified as one of the high risk Dengue affected regions in the district. Therefore, the purpose of the present study was to identify the association between Dengue epidemic and, age and gender in Kolonnawa MOH area. The study was carried out using 615 recorded dengue cases in the area, during the south-west monsoon season from May to September 2016. The 'Moran's I, Kernel density estimation' and 'nearest neighborhood analysis' were used as analytical methods. The analysis of data was accomplished through the integrated use of ArcGIS 10.1 software packages along with Microsoft Excel analytical tool. Field observation was also carried out for verification purposes during the study period. Results of the both Moran's I index and nearest neighborhood analysis indicated that the spatial distribution of dengue cases showed a cluster distribution pattern which related to the drainage system in the area. According to the results of the Kernel density estimation, twenty Dengue high risk hotspots have been identified from the area. Considering the gender factor of the dengue affected individuals, 309 males and 306 females were identified during the study period, which did not show any considerable difference between gender wise totals. However, some gender wise spatial differences could be identified in the western part of the area. More female patients were recorded in areas such as Sedawaththa, Malpura and Kiththampahuwa and more male patients in Salamulla, Megoda-Kolonnawa areas. Comparatively high population densities, housing complexes and ongoing construction sites were identified as reasons for this high record of dengue cases. The results reveal that the age groups 6-15 and 16-30 were the highly vulnerable age groups for dengue infection. These two age groups represented 74 per cent of the total Dengue cases during the study period. High population density and man-made environment were observed as the driving forces for Dengue cases and spatial distribution of dengue cases were clustered around the water sources in the area. The findings of the study will be important for future dengue prevention measures; they will help planners and the decision makers in the health sector to easily recognize the high risk age groups for the disease and the high concentration areas of recorded dengue cases. Therefore the results can be further used for awareness and education purposes and to empower the future Dengue prevention campaigns.*

Keywords: Dengue fever, Gender, Spatial distribution, Kernel density and Moran's I index

Introduction
Dengue is identified as the most dangerous mosquito borne viral disease in the world, caused by four dengue virus serotypes (DENV-1, DENV-2, DENV-3, and DENV-4). Aedes aegypti and Aedes albopictus are the vectors widely adapted to urban and

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