

TEMPORAL AND SPATIAL IDENTIFICATION OF DENGUE FEVER OUTBREAK IN KANDY MUNICIPAL AREA BY GIS TECHNOLOGY

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Dengue fever is one of the main epidemics in Sri Lanka. It costs a lot for government and families and it consumes lots of resources and efforts on surveillance and controlling as well as for treatment every year. This project has utilized GIS technology and power of mapping to help health department to have a clear view on dengue epidemics in Kandy district and especially in Kandy Municipal Council (KMC).

Though several researches have been conducted in Kandy district, this is the first attempt to map and depict risky zones of KMC and risky GN divisions of Kandy district as well as temporal changes of dengue fever incidents according to rainfall and seasons.

Mapping and classification of districts based on number of incidents by ArcGIS software was the method for depicting risky districts of Sri Lanka and GNs of Kandy on maps from 2010 to 2014. Point locations were collected in KMC for 2014 patient's addresses by GPS and Google Earth in KMC. Geostatistical analysis tools of ArcMap 10.2.2 identified the pattern of the disease, hot spots, density map and directional changes of incidents in KMC 2014. Statistical analysis was performed to find correlation between climatic data and dengue fever incidents in KMC 2014. Descriptive statistics also helped to extract more information about incidents in Kandy districts from 2009 to 2014.

The results of the project are many maps such as Sri Lankan districts map of dengue fever 2010-2014, Kandy districts high risk GN divisions for over all 5 years data from 2009 to 2014, KMC high risk GNs 2012-2014, KMC density risk map, disease directional map and hot spots on 2014. Statistical analysis did not find enough evidence to prove any correlation between dengue incidents and climatic factors in KMC. In Kandy district the weekends were specified as risky days for dengue fever incidents.

Though this is the important step to develop GIS techniques for monitoring and controlling dengue fever by identifying risk zones in Kandy, this is not all of the power of GIS and remote sensing and in the other words this is only the beginning. There are many factors which influence outbreak of dengue fever and they should be identified through spatial modelling based on field visits. Waste management, hydrological factors, land use, garbage places and etc. could be taken into consideration for modeling.

For further researches web GIS also can be the other important part to publish interactive online map of dengue fever incidents. Collection of data also could be revised and shift to mobile GIS applications for precise data collecting and processing because collection and editing data for current project took 6 months.