Analysing Trend and Spatiotemporal Distribution Pattern of Dengue Fever as A Biological Hazard in Sri Lanka

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Abstract

Dengue is one of the virus diseases transmitted through female *Aedes aegypti* mosquitoes and found in tropical and subtropical countries of the world. Dengue Fever (DF) and Dengue Haemorrhagic Fever (DHF) are caused due to the dengue virus; around 500,000 people are reported as infected annually, and 2.5 billion people are at risk of DF and DHF in the world. Sri Lanka is one of the countries found in South Asia at high risk for DF and DHF because the number of cases have been reported frequently in the recent decades and developing as a severe biological hazard. Hence, this study aimed to analyse the dengue fever trend and its spatiotemporal distribution over Sri Lanka from 2010 to 2021. Secondary data were collected using the Epidemiology Unit, Ministry of Health, and published research articles for this research. Data were analysed by adopting descriptive statistics using SPSS and Ms Excel software. Further, the Spatiotemporal distribution of dengue fever was mapped using ArcMap 10.1 software. Results highlighted that there is an increasing trend of prevalence of Dengue Fever in Sri Lanka during the period of 2010 to 2021. Districts of Mannar, Polonnaruwa, Nuwara Eliya and Moneragala are decreasing the prevalence of Dengue Fever. Colombo (153238), Gampaha (99429), and Kandy (46736) were the top three districts in terms of reporting dengue cases in Sri Lanka, respectively. Mulativu District (1545) had the lowest reported cases; the highest dengue outbreak was reported in 2017, with 186181 cases. Fifty-five thousand four hundred eighteen annual average cases were observed, with 665010 total cases during the past 12 years. Most cases were reported in July (15%), and the lowest cases were reported in April (5%). There is a strong positive correlation between Dengue Fever cases reporting and population distribution (.881) and annual average rainfall (.524) by District level. There is no specific treatment for Dengue Fever. The best way to mitigate dengue fever is the avoid mosquito bites. Urban and suburban areas are most vulnerable than rural areas of Sri Lanka. Proactive hazard management measures should be implemented throughout the year with the support of relevant stakeholders in order to minimise the risk of dengue fever in Sri Lanka.

Keywords: Dengue Fever, Biological Hazard, Risk, Mitigation, Sri Lanka.

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