

## Chapter 4

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# Effect of Flood on the Out Breaking of Dengue Fever in Sri Lanka in 2017

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### ABSTRACT

*Sri Lanka is frequently affected by flooding, which enhances the threat of dengue fever and impacts destructively on the nation's socioeconomic and developmental progress. Sri Lanka obtains most of its rainfall during the southwest and northeast monsoonal seasons. In 2017 immense rainfall during the southwest monsoon season initiated serious flooding, mainly affecting the Western Province, particularly the Kalutara district. This event was named the 2017 Sri Lanka floods. Number of dengue fever cases was reported, with 0.89 per cent of population being notified as dengue-affected people. The Western Province was the highest proportion of its population affected by dengue fever (1.51 per cent). Dengue fever outbreaks can be reduced by destroying the breeding habitats of vector mosquitoes by proper environmental management techniques, alteration and maintenance of urban infrastructure, and community awareness programs.*

*Keywords: Dengue fever, Disasters, Flooding, Southwest monsoon, Sri Lanka.*

### 1. Introduction

Sri Lanka is an island nation in the Indian Ocean, southeast of the Indian subcontinent, in a strategic location near major Indian Ocean sea lanes. In recent years Sri Lanka has experienced several natural disasters with significant loss of human life and damages to property (NITF, 2016). Floods, landslides, cyclones, droughts, wind storms, coastal erosion, tsunami, sea surge, and sea-level rise are

the major natural hazards, causing loss of life and enormous damage to property. In addition to these natural disasters, the country also incurs heavy losses on account of manmade hazards such as deforestation, indiscriminate coral, sand and gem mining, and industrial hazards, ethnic conflicts and occasional political violence (Sri Lanka Disaster Knowledge Network, 2009). However, the greatest threats to Sri Lanka are weather-related hazards because the island lies in the path of two monsoons (Ministry of Disaster Management, 2017).

Floods are the most commonly occurring disaster in Sri Lanka. Flooding may occur as an overflow of water from water bodies, such as a river, lake, or ocean due to the accumulation of rain water. The increase in population and consequent need for land has forced more and more people to live and work in vulnerable areas, thereby intensifying the risk to life and property in the event of major floods. Heavy rainfall, the large volume of runoff water from the catchment areas of rivers, deforestation, improper land use and the absence of scientific soil conservation practices are the major factors contributing to floods in Sri Lanka. Urbanization, coupled with insufficient drainage systems, triggers urban flash floods. This is compounded by global phenomena, like climate change, that increase rainfall intensities (Sri Lanka Disaster Knowledge Network, 2009).

The weather in Sri Lanka is dictated by two monsoon seasons that bring rain to the west and southwest coasts and the northern region of the east coast. The southwest monsoon typically peaks during late May to the beginning of June, with prevailing winds from the south and southwest, streaming toward the Bay of Bengal. The areas that usually receive the heaviest rain are in the south and west of the country, including *Kalutara*, *Ratnapura*, and *Colombo*. The flood resulted from a heavy southwest monsoon which was worsened by the arrival of the precursor system to Cyclone Mora (UNDP 2017) causing flooding and landslides throughout Sri Lanka in 2017 (BBC 2017). The event was named the '*Sri Lanka floods of 2017*'. The floods affected 15 districts in the Western, Sabaragamuwa and Southern Provinces and part of the Central Province (The Guardian 2017). The worst-affected districts were *Kalutara* (BBC 2017), *Matara* and *Ratnapura* (CNN 2017), where many people were displaced and their properties partially or completely damaged (Al Jazeera 2017).

Floods impact on both individuals and communities, and have social, economic, and environmental consequences. The immediate impacts of flooding include loss of human life, damage to property, destruction of crops, loss of livestock, and deterioration of health conditions (Queensland Government 2018). Weakening of health status of community is an alarming factor resulted from flooding. Flooding is associated with an increased risk of infection (water-borne diseases) and may indirectly lead to an increase in vector-borne diseases through the expansion in the number and range of vector habitats. Malaria, dengue and dengue hemorrhagic fever, yellow fever, and west Nile fever are considered common vector-borne diseases (WHO 2018a).

Dengue fever is one of the most serious diseases in world, particularly in Sri Lanka. Severe infection or late diagnoses are often fatal, particularly for children and susceptible persons. Water that has been stored in a container for a long period, extended rainfall during the last rainy season, and high ambient relative-humidity