

Dengue Fever in Nepalese Context

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Abstract

*Dengue fever is one of the leading public health problems of tropical and subtropical countries across the world. Transmission dynamics of dengue fever is largely affected by meteorological and environmental factors, and its temporal pattern generally peaks in hot-wet periods of the year. The aim of this study was to fill this research gap by utilizing epidemiological and earth observation data in Kailali district, one of the frequent dengue outbreak areas of Nepal. This article evaluates the dengue case notification, surveillance, laboratory facilities, collaboration, and how federal government, province government and local government responded to the outbreak. **Methods:** Qualitative data collections tools are in-depth interview were used to analyze the dengue outbreak response. Participants were sampled purposively, with deliberate selection regarding their experience, to help ensure involvement of the key stakeholders in the dengue surveillance and outbreak response in Kailali district including federal government policy-makers, officials **Results:** There was a variation in the proportion of cases confirmed by the laboratory, with participants noting that between (10-50) % of dengue cases were confirmed. The study findings demonstrate the extensive limitations existing in a fragile state that need to be addressed before and during a dengue outbreak. **Conclusions:** Surveillance system of disease is difficult due to geographical access and lack awareness on community people. But dengue is recently emerged in this province and along the country. The political context can affect the financial and trained human resources available to combat dengue. Three level government systems must be engaged to prevent and control of outbreak.*

Keywords: Seasonal mosquito induced viral Fever, Dengue fever, Dengue Hemorrhagic Fever, Shock syndrome, preventable.

Introduction

Dengue is a mosquito induced viral infection caused by four types of viruses (DENV-1, DENV-2, DENV-3, DENV-4) belonging to the *Flaviviridae* family. The viruses are transmitted through the bite of infected *Aedes aegypti* and *Aedes albopictus* female mosquitoes that feed both indoors and outdoors during the daytime. These mosquitoes thrive in areas with standing water, including puddles, water tanks, containers and old tires. Lack of reliable sanitation and regular garbage collection also contribute to the spread of the mosquitoes. Total infected persons in Sudurpashchim Province were 27 and 5095 were infected in national wide till 13th September 2019. Among them 2 persons were died. But public rumors and fairness is highly spreads in rural and urban society in Nepal.

National dengue a guideline was first developed in Nepal in 2008 based on the World Health Organization (WHO) guidelines 1997 which was revised in 2011. This revised national guidelines on dengue prevention, management and control, 2019 aims to provide a technical 'gold-standard' advice on all aspects of dengue using the latest internationally adopted definitions, protocols and guidelines. It also provides simple, and easy to reference content, which can be printed and displayed on the walls of doctors' rooms, wards or simply held in the hands of health workers who are spreading awareness on dengue within their local communities. Nepal reported its first case of dengue in 2004 and the first indigenous case in 2006. Only sporadic cases were then seen until the outbreak in 2010, with 96 cases reported nationally seen almost solely in 3 administrative districts in the Terai region on the Indian border: Chitwan, Nawalparasi, and Rupandehi. World Health Organization Assembly urged member states to improve surveillance, prevention, control, and management of dengue. Guidelines highlight the need to incorporate lessons learnt from country experiences into outbreak response plans. Country responses to dengue have been documented from all around the world. This paper

focuses on dengue case notification, surveillance, laboratory facilities, inter-sectoral collaboration, and how government services and the community responded to the dengue outbreak.

Aedes aegypti Dengue is transmitted primarily by the female mosquito *Aedes aegypti* (figure 5), which thrives in and around urbanized areas. It is diurnal and highly anthropophilic, with domestic forms showing increased propensity towards exclusive human feeding. It has greater competency for transmission than *Aedes Albopictus*, and coupled with short, frequent biting behavior, it can transmit dengue multiple times during a single gonotrophic cycle. It bites during the day, attracted to human odorous compounds such as CO₂, lactic acid, sulphides and ketones. Feeding occurs after an initial probing of the skin surface, and once engorged; the mosquito prefers to rest indoors to begin the gonotrophic cycle. The most common epidemic vector of dengue in the world is the *Aedes aegypti* mosquito. It can be identified by the white bands or scale patterns on its legs and thorax.

Symptoms of dengue in some cases, the infection is asymptomatic – persons do not exhibit symptoms. Those with symptoms get ill between 4 to 7 days after the bite. The infection is characterized by flu-like symptoms which include a sudden high fever coming in separate waves, pain behind the eyes, muscle, joint, and bone pain, severe headache, and a skin rash with red spots. Treatment includes supportive care of symptoms. There is no antiviral treatment available.

Methods

Qualitative data collections tools are in-depth interview were with 10 health personals and 10 laboratory technicians used to analyze the dengue outbreak response. Participants were sampled purposively, with deliberate selection regarding their experience, to help ensure involvement of the key stakeholders in the dengue surveillance and outbreak response in Kailali district including federal government policy-makers, officials from three key districts, healthcare province government health personals s and local leaders. Community leaders available for focus groups discussions were identified with district officials. Contact was made with each person involved via phone or in person. The sample size took into account the saturation principle; data collection was deemed sufficient when new data did not provide new information or ideas on the topics being questioned.

Results

Interviews with healthcare workers and the laboratory technician highlighted that the main diagnostic tools were hematological and clinical findings alongside serological diagnosis rapid diagnosis test. Only one participant had access to polymerase chain reaction privately, which was not otherwise available. The lack of facilities within Nepal was identified as a key limitation by both government and clinical staff as ELISA tests were not available countrywide. There was a variation in the proportion of cases confirmed by the laboratory, with participants noting that between 10 and 50% of dengue cases were confirmed. The study findings demonstrate the extensive limitations existing in a fragile state that need to be addressed before and during a dengue outbreak in order to provide reliable dengue surveillance data and an adequate response in accordance with international dengue guidelines is also applied in Nepal.

Prevention

First of all, we have to destroy the habitats of mosquitoes, especially *Aedes Aegypti*. Residents and travelers to dengue endemic areas should take necessary protective measures from mosquito bites. The personal protective measures for dengue include using mosquito nets when sleeping or resting during daytime, using window and door screens, using mosquito repellants to exposed skin and using protective clothing like long sleeves. People infected with the virus should also apply these measures to minimize contact with mosquito and prevent further transmission. If available, pre-soak or spray outer layer clothing and gear with permethrin. Get rid of water containers around dwellings and ensure that door and window screens work properly.

Conclusion

Surveillance system of disease is difficult due to geographical access and lack awareness on community people. But dengue is recently emerged in this province and along the country. The

political context can affect the financial and trained human resources available to combat dengue. Three level government systems must be engaged to prevent and control of outbreak. For awareness of the people the media also played a vital role in the outbreak response. Using the media for health communication is beneficial for people who may infect or affected.

References

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Appendix

1. Aedes Aegypti Mosquito



2. Life Cycle of Aedes Aegypti Mosquito



