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Modelling the dynamics of dengue real epidemics. (English) Zbl 1211.37116

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Summary: In this work, we use a mathematical model for dengue transmission with the aim of analysing and comparing two dengue epidemics that occurred in Salvador, Brazil, in 1995-1996 and 2002. Using real data, we obtain the force of infection, Λ , and the basic reproductive number, R_0 , for both epidemics. We also obtain the time evolution of the effective reproduction number, $R(t)$, which results in a very suitable measure to compare the patterns of both epidemics. Based on the analysis of the behaviour of R_0 and $R(t)$ in relation to the adult mosquito control parameter of the model, we show that the control applied only to the adult stage of the mosquito population is not sufficient to stop dengue transmission, emphasizing the importance of applying the control to the aquatic phase of the mosquito.

MSC:

37N25 Dynamical systems in biology

92D30 Epidemiology

Cited in **23** Documents

Keywords:

dengue modelling; non-linear differential equations; epidemic time series; effective reproductive number

Full Text: [DOI](#)

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