## ABSTRACT

Dengue Hemorrhagic Fever (DHF) is a disease caused by an arbovirus that enters the human body through the Aedes aegypti mosquito. Dengue Hemorrhagic Fever is characterized by symptoms, headache; reddish skin that looks like measles; and muscle and joint pain. The spread of dengue hemorrhagic fever (DHF) globally has tended to be higher in the last 50 years, thus giving rise to ideas for systematic prevention. Many factors cause this dengue fever, climate factors, weather, residential density, and other factors. The Epidemiological Model of DHF can provide a pattern of prevention against dengue outbreaks so that this problem can be modeled mathematically and through the stability of the equilibrium point, the dynamics or behavior of the model can be determined. The spread of DHF can be suppressed by providing control in the form of vaccines, eradication with insecticides and treatment. This review article aims to provide a systematic description of the causative factors, a mathematical model of DHF with an epidemiological approach. To get the right model related to the SIR epidemiological mathematical model and its modifications which can be an alternative solution to describe and analyze the model mathematically. The methodology used is to systematically search for journals and articles from August 2021 to April 2022. This is done by accessing electronic journal portals such as: Elsevier, Springer, ResearchGate, google scholar, Scient direct and so on. Other references also use national journals and information on the Ministry of Health's website. The results of a review of factors that cause dengue fever are physical environmental factors that have a significant influence on rainfall and air temperature. Mathematical models with Optimal Control can be used as an alternative to mathematical analysis which is expected to help solutions to reduce the spread of dengue fever. The recommendation given is to investigate the disease-causing factors from the chemical aspect related to the chemical effect in water that influences the growth of mosquito larvae in water which can indirectly affect DHF disease and involves these parameters in mathematical models and optimal control.



**KEYWORDS**

Dengue Hemorrhagic Fever, Mathematical Model, Optimal Control

**Cite This Paper in IEEE or APA Citation Styles**

(a). IEEE Format:

[1] Pardi Affandi , M. Ahsar K , Eko Suhartono , Juhriyansyah Dalle , "Sistematic Review: Mathematics Model Epidemiology of Dengue Fever," Universal Journal of Public Health, Vol. 10, No. 4, pp. 419 - 429, 2022. DOI: 10.13189/ujph.2022.100415.