

# **Wolbachia in Dengue Control: A Systematic Review**

## **ABSTRACT**

**BACKGROUND:** Dengue fever outbreaks have been an important public health issue causing high morbidity and mortality, and serious economic effects, particularly in Asia. Control strategies are a challenge to be implemented due to a variety of factors. However, new approaches such as Wolbachia-infected *Aedes aegypti* have been shown to successfully lowering the life spans of the mosquito, eggs resistance, and disease transmission capabilities. Field trials are still on-going, and there are data to support its benefit in a large population. This systematic review aims to determine the current progress and impact of using Wolbachia in curbing dengue cases in high dengue case locations worldwide.

**METHODOLOGY:** The study uses the Preferred Reporting Items for Systematic reviews and Meta-Analyses review protocol, while the formulation of the research question was based on population of interest, comparison, and outcome. The selected databases include Web of Science, Scopus, PubMed, SAGE, and EBSCOhost. A thorough identification, screening, and included process were done and the results retrieved four articles. These articles were then ranked based on quality using mixed methods appraisal tool.

**RESULTS:** A total of four articles were included from 2019 and 2020 reports in both dengue- and non-dengue-endemic settings. In this review, comparisons in terms of the hierarchy of the study design, community engagement and acceptance, Wolbachia-infected *A. aegypti* deployment, entomological outcome, and epidemiological outcomes were detailed. All four studies showed a decrease in dengue incidence in Wolbachia-intervention populations.

**CONCLUSION:** Wolbachia programs have been shown to be an effective method in combating dengue diseases. Strong community engagement and involvement from multidisciplinary teams are important factors to ensure the effectiveness and good outcomes of the program.