



ABSTRACT

Title of Abstract : Effectiveness and Safety of Dengue Vaccines in School-Aged Children in Endemic Areas: A Narrative Review
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Background : Dengue fever remains one of the most significant mosquito-borne viral diseases, particularly in tropical and subtropical regions such as Indonesia. The increasing incidence among school-aged children highlights the urgent need for effective and sustainable prevention strategies. Vaccination has emerged as a crucial intervention to reduce dengue burden, with two main vaccines—TAK-003 (Qdenga®) and CYD-TDV (Dengvaxia®)—showing varying efficacy and safety profiles.

Objective : This narrative review aims to synthesize the current scientific evidence on the effectiveness, safety, and policy implications of dengue vaccination among school-aged children living in endemic regions.

Research Methods/ Implementation Methods : This study employed a narrative review approach. Literature was searched through PubMed, ScienceDirect, and Google Scholar databases for publications from 2020 to 2025. A total of 20 eligible articles were included, comprising randomized controlled trials, quasy experiment, observational studies and spatial epidemiological studies. The inclusion criteria encompassed studies published in English or Indonesian, focusing on dengue vaccines among children aged 4–16 years in endemic countries. Key data on vaccine efficacy, immunogenicity, safety, and implementation outcomes were descriptively synthesized. Total 20 included articles were analyze narratively.

Results : Findings consistently indicate that TAK-003 provides an efficacy of 62–80% against symptomatic dengue and over 85% against hospitalized cases up to three years post-vaccination, with favorable safety and immunogenicity, especially among seropositive children. In contrast, CYD-TDV demonstrated high efficacy only among seropositive individuals aged ≥ 9 years but carried an increased risk in seronegative recipients. Economic modeling studies in Indonesia found dengue vaccination to be cost-effective, while mathematical models showed that higher vaccine coverage substantially reduces the basic reproduction number (R_0).

Conclusion/Lesson Learned : Current evidence supports TAK-003 as an effective and safe vaccine for school-aged children in endemic regions compare to CYD-TDV. Integration of dengue vaccination with vector control and risk-based surveillance is recommended to enhance national dengue prevention strategies and achieve long-term disease reduction.

Keyword : dengue vaccine, vaccine effectiveness, safety, school-aged children, endemic regions