

ABSTRAK

Latar Belakang: Kabupaten Sleman merupakan salah satu kabupaten dengan insidensi dengue >10 per 100.000 penduduk selama tujuh tahun terakhir (2019–2025). Inovasi pengendalian dengue melalui pelepasan nyamuk ber-Wolbachia telah diimplementasikan sejak 2021, namun belum pernah dievaluasi secara komprehensif bersama program pengendalian dengue terintegrasi. Penelitian ini bertujuan mengevaluasi implementasi program pengendalian dengue dari aspek penyelenggaraan program, sistem surveilans, dan efektivitas intervensi Wolbachia.

Metode: Penelitian menggunakan mixed method deskriptif dan desain ekologi analitik dengan pendekatan spatiotemporal. Evaluasi program menggunakan *logic-based framework*, evaluasi surveilans mengacu pada komponen evaluasi surveilans CDC, sedangkan sub studi analitik menggunakan *Acute Public Health Events Risk Assessment Framework*. Sampel evaluasi program dan surveilans terdiri atas 26 petugas DBD dan surveilans di puskesmas serta Dinas Kesehatan, ditambah 26 petugas klinik swasta yang dipilih secara purposive. Sub studi analitik menggunakan data infeksi dengue Kabupaten Sleman tahun 2019–2025. Data dikumpulkan melalui wawancara terstruktur, wawancara mendalam, dan telaah dokumen, kemudian dianalisis menggunakan distribusi frekuensi, ukuran pemusatan, Poisson-CARBayes, serta *controlled interrupted time series* dengan *Generalized Linear Mixed Model* binomial negatif.

Hasil: Evaluasi program menunjukkan komponen yang belum optimal pada aspek input (SDM, perencanaan, pendanaan, SOP), proses (pelibatan masyarakat dan supervisi), serta output (capaian ABJ bulanan yang belum konsisten >95%). Sistem surveilans juga belum optimal pada deteksi kasus, analisis dan diseminasi data, serta atribut *timeliness*, *flexibility*, dan *acceptability*. Tidak terdapat perbedaan implementasi pengendalian maupun surveilans dengue antara puskesmas intervensi Wolbachia dan nonintervensi. Intervensi Wolbachia menurunkan insidensi dengue sebesar 46% secara spasial dan 67,2% secara temporal (2019–2025), serta menurunkan frekuensi fogging sebesar 68,4%.

Kesimpulan: Implementasi program pengendalian dengue di Kabupaten Sleman tahun 2025 masih belum optimal pada aspek program dan sistem surveilans, tanpa perbedaan implementasi antara wilayah intervensi dan nonintervensi. Intervensi Wolbachia terbukti efektif menurunkan insidensi dengue sejak implementasi pada Mei 2021.

Kata Kunci: Dengue, Disease Surveillance; Program Evaluation, Spatiotemporal, Wolbachia

ABSTRACT

Background: Sleman District has reported dengue incidence exceeding 10 cases per 100 000 population over the past seven years (2019–2025). An innovative dengue control strategy involving the release of Wolbachia-infected mosquitoes has been implemented since 2021; however, its implementation has not yet been comprehensively evaluated alongside the integrated dengue control programme. This study aimed to evaluate the implementation of the dengue control programme in terms of programme management, the dengue surveillance system and the effectiveness of the Wolbachia intervention.

Methods: This study employed a descriptive mixed-methods approach and an analytical ecological design with a spatiotemporal approach. Programme evaluation was conducted using a logic-based framework, while surveillance evaluation followed the Centers for Disease Control and Prevention (CDC) surveillance evaluation framework. The analytical substudy applied the Acute Public Health Events Risk Assessment Framework. The programme and surveillance evaluations involved 26 dengue programme officers and surveillance officers from primary health centres and the District Health Office, along with 26 private clinic staff selected through purposive sampling. The analytical substudy utilised dengue infection data from Sleman District for the period 2019–2025. Data were collected through structured interviews, in-depth interviews and document reviews. Data analysis included descriptive statistics, Poisson conditional autoregressive modelling (CARBayes) and controlled interrupted time series analysis using a negative binomial generalised linear mixed model.

Results: The programme evaluation identified several components that remained suboptimal in the input domain (human resources, planning, funding and standard operating procedures), process domain (community engagement and supervision) and output domain (monthly larval-free index achievement not consistently exceeding 95%). The dengue surveillance system was also suboptimal in case detection, data analysis and dissemination, and the surveillance attributes of timeliness, flexibility and acceptability. No differences were observed in dengue control implementation or surveillance performance between Wolbachia intervention and nonintervention primary health centres. The Wolbachia intervention reduced dengue incidence by 46% in the spatial analysis and 67.2% in the temporal analysis (2019–2025), while reducing the frequency of insecticide fogging by 68.4%.

Conclusions: The implementation of the dengue control programme in Sleman District in 2025 remains suboptimal in both programme management and the surveillance system, with no implementation differences between intervention and nonintervention areas. The Wolbachia intervention has proven effective in reducing dengue incidence since its implementation in May 2021.

Keywords: Dengue; Disease Surveillance; Program Evaluation; Spatiotemporal Analysis; *Wolbachia*.