Implementation Of A Mobile-Based Geographic Information System For Reporting Larva-Free Rate

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ABSTRACT

Dengue Hemorrhagic Fever (DHF) remains a serious public health issue in Indonesia. According to data from the Ministry of Health, DHF cases have continued to rise, with 210,644 cases and 1,239 deaths reported by the 43rd week of 2024. Additionally, the Early Warning and Response System (SKDR) recorded 624,194 cases during the same period. Jember Regency is one of the areas in East Java Province with a high number of cases, reporting 1,627 cases in 2024 and 293 cases by the second week of 2025. One crucial indicator in DHF control is the Larvae Free Index (ABJ). In 2024, the ABJ in Jember was recorded at 92%, which is below the national minimum standard of ≥95%. Challenges such as irregular manual reporting and errors in larvae identification by field officers hinder effective monitoring. This study developed a mobile application based on Geographic Information System (SIG) to detect mosquito larvae and support digital, real-time ABJ reporting. The system includes features such as user login, larvae detection using GRU, location mapping, inspection forms, and report history. Testing showed that all features functioned properly. Field trials on 50 houses resulted in 90% detection accuracy, consistent with manual inspection results. Although a bug was found in the re-detection feature, a temporary solution has been implemented, with further improvements planned. This application has proven effective in supporting ABJ monitoring efforts.

Keywords: *DHF, Mosquito Larvae, Mobile, GIS, ABJ*