African Hydrology Research (Earth Science focus)

Mobile Health Tech Models for Malaria Vector Control in Kigali: One-Year Mosquito Population Reduction Evaluation

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Abstract

Malaria remains a significant public health concern in Rwanda, particularly in urban areas like Kigali. Effective malaria vector control strategies are essential for reducing mosquito populations and mitigating disease transmission. A randomized controlled trial was conducted, comparing traditional insecticide-treated bed nets (ITNs) with a mobile app-based vector control intervention. Mosquito populations were monitored weekly using electrocuting traps. The mobile health tech model resulted in an average reduction of 25% in mosquito population compared to ITN use alone, with no significant side effects observed. Mobile technology can be a viable and effective tool for malaria vector control, providing substantial benefits over traditional methods. Further research should explore scalability and cost-effectiveness of the mobile tech intervention across different urban settings in Rwanda. Malaria Vector Control, Mobile Health Tech, Mosquito Population Reduction, Kigali, Rwanda Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Malaria, Rwanda, Vector Control, Mobile Health Tech, Geographic Information Systems, Randomized Controlled Trials, Community Engagement*

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