

ORIGINAL RESEARCH

VAS-PLUS-PRO: Android-Scalable Web Application for 100 Per Cent Coverage and Data-Quality Monitoring of Vitamin A, Deworming and Childhood Immunization

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Abstract

Vitamin A supplementation and deworming are recognized as High Impact Nutrition Interventions which, alongside the Expanded Programme on Immunisation (EPI), play a pivotal role in reducing childhood morbidity and mortality while safeguarding the fundamental right to health. Yet, despite clear national targets, many Kenyan primary health facilities seldom achieve 100 per cent coverage for immunisation, Vitamin A supplementation and deworming except during the Malezi Bora campaigns held each May and November, when partner support allows rapid scale-up of these services. Such campaigns frequently report implausibly high coverage, occasionally exceeding 120 per cent, raising concerns about data accuracy and masking persistent service gaps. Missed doses and delayed follow-up continue to expose children to micronutrient deficiencies, worm infestations and vaccine-preventable diseases. Innovative information-technology (IT) solutions can enhance surveillance, enable timely follow-up and reinforce accountability. This project set out to create a computer-based monitoring tool to track individual child schedules for Vitamin A, deworming and routine immunisation, generate real-time alerts and defaulter lists, and ultimately support attainment of 100 per cent coverage. A prototype web-based application, **VAS-PLUS-PRO**, was developed using Python (Flask) with a PostgreSQL database. It provides secure, role-based user access, client registration and service-history recording, together with automated dashboards and analytical reports. The system generates “due-soon” and “defaulter” lists detailing client demographics, health facility, village and telephone contacts, enabling direct tracing by phone or via community health promoters. To validate performance, multiple dummy child-health records reflecting national schedules were entered to test functionality, coverage calculations and alert accuracy. Across repeated test runs the application correctly identified every child approaching service due dates and accurately flagged all simulated defaulters, specifying the services missed. It produced downloadable defaulter lists in PDF, Word and CSV formats, greatly reducing the time required for manual register checks. The interface proved intuitive and the reports well aligned with routine monitoring needs. **VAS-PLUS-PRO** demonstrates how integrating IT into primary health care can strengthen routine child-health services, assure data quality and enable facilities to achieve and sustain 100 per cent coverage without reliance on external donor campaigns.

Keywords: VAS-PLUS-PRO, Vitamin A, deworming, immunisation, defaulters